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U.S. Department of Transportation
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Research, Development, and
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Office of Implementation

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This catalog lists selected publications, visual aids, computer programs and training materials that are available as a part of the Federal Highway Administration (FHWA) Implementation Program. Items are listed alphabetically under program areas. Subtitles and series are shown separately under the main item heading.

Items are available directly from the source(s) indicated under the "Availability" heading in each listing. Addresses for the sources are shown in the back of the catalog (Page 88). When ordering items, please specify the main title, subtitle, catalog number, and date if given. Write or telephone for current prices. Some items are available without charge to qualified individuals and agencies; others are available on a loan basis only. Send self-addressed adhesive mailing label with each request.

Indexes, at the back of the catalog, are arranged both alphabetically and by program area. Implementation Packages and Technology Sharing Reports are also listed by number.

The Office of Implementation wishes to recognize and credit other offices and agencies involved in preparing and promoting these items.

This catalog is revised on a periodic basis. Further inquiries should be addressed to the Director, Office of Implementation (HRT-1), Federal Highway Administration, 6300 Georgetown Pike, McLean, Virginia 22101.

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SAFETY

Pedestrian and Bicycle Safety

DEVELOPMENT OF PRIORITY ACCESSIBLE NETWORKS—PROVISIONS FOR THE ELDERLY AND HANDICAPPED PEDESTRIANS

This report describes a procedure for assessing the needs of elderly and handicapped pedestrians in urban areas. A method is provided for identifying routes or corridors along which there is a substantial travel demand by the elderly and handicapped and various types of accessibility features are described.

Publication

FHWA-IP-80-8 224 pp (January 1980)

Availability—Government Printing Office
GPO 050-001-00163-2

Visual Aid

This slidetape illustrates the problems which face elderly and handicapped pedestrians and shows, through references to the companion Implementation Manual, how those problems can be corrected. The slidetape briefly describes how an urban area can be separated into manageable study districts. Then it describes critical features of travel routes and how priorities are set for their improvement.

Slidetape 10 minutes (loan) (September 1980)

Availability—RD&T Report Center, HRD-11
—FHWA Regional and Division Offices

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GUIDELINES FOR MAKING PEDESTRIAN CROSSING STRUCTURES ACCESSIBLE

Accessibility features for pedestrian over- and under crossing structures should be incorporated into the structure early in the design stage. Structures addressing the needs of a majority of handicapped can be provided by using the wheelchair user and blind pedestrians design models. Ramp grades, surface textures, and other features used to aid handicapped pedestrians are described.

Publication

FHWA-IP-84-6 30 pp (August 1984)

Availability—RD&T Report Center, HRD-11

PRIORITY ACCESSIBLE NETWORK FOR THE ELDERLY AND HANDICAPPED PEDESTRIANS IN NEW ORLEANS

This report presents the results of the New Orleans Priority Accessible Network Project. It focuses on improving access for the elderly and handicapped pedestrians along routes or corridors with a substantial travel demand. In essence, the New Orleans Project applied the procedures of priority accessible network planning within the city of New Orleans; developed a prioritized accessibility implementation plan for three planning districts in the city; prepared a plan to evaluate the effect of an implemented accessible network on the mobility and safety of elderly and handicapped pedestrians; and evaluated the effectiveness of the priority accessible network criteria as a basis for ranking improvements.

Publication

FHWA-TS-84-206 103 pp (August 1984)

Availability—Office of Implementation, HRT-20

PRIORITY ACCESSIBLE NETWORK FOR THE ELDERLY AND HANDICAPPED PEDESTRIANS IN SEATTLE

This document presents Seattle's experience with priority accessible network (PAN) planning for elderly and handicapped pedestrians. The planning process included a city-wide assessment of land use and transportation related to elderly and handicapped pedestrian access needs. Mobility improvements such as sidewalks, curb ramps, and bus pullouts were identified along 12 selected priority access routes. Plans were also made

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for implementing and evaluating the identified improvement needs. The priority accessible network guidelines were critiqued following practical application of the planning techniques.

Publication

FHWA-TS-84-205 92 pp (August 1984)

Availability—Office of Implementation, HRT-20

PROCEEDINGS FOURTH ANNUAL PEDESTRIAN CONFERENCE

This report contains the proceedings of the Fourth Annual Pedestrian Conference which was conducted at the University of Colorado at Boulder in September 1984. The proceedings contain a wealth of tested pedestrian safety techniques that when applied will help reduce pedestrian accidents. Also included are a variety of approaches used in the U.S., Canada, and Europe to create unusually attractive, functional, and highly used urban pedestrian spaces.

Publication

FHWA-TS-84-218 95 pp (July 1984)

Availability—Office of Implementation, HRT-20

Night Visibility

NEW DIRECTIONS IN ROADWAY LIGHTING

This technology sharing report explains the 1983 roadway lighting design process adopted by the Illumination Engineering Society and the concomitant revisions to the "American Standard Practice for Roadway Lighting."

Publication

FHWA-TS-80-223 30 pp (March 1980)

Availability—Government Printing Office
GPO 050-000-00159-9

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Visual Aid

Slidetape color 15 minutes (1980)

Availability—RD&T Report Center, HRD-11
—FHWA Regional and Division Offices

ROADWAY LIGHTING HANDBOOK

The Roadway Lighting Handbook was written to satisfy the need for an all-inclusive and up-to-date book covering all aspects of public roadway lighting. It is intended for use as a guide in planning, design, operation and maintenance of roadway lighting systems. The material can be used as a reference document; it can also serve as a textbook for formal education and training. The handbook should help bridge the gap between practical and theoretical concepts of roadway lighting.

Publication

FHWA-IP-78-15 248 pp (December 1978)

Availability—Government Printing Office
GPO 050-003-00339-5

ROADWAY LIGHTING HANDBOOK—1983 ADDENDUM

This publication supplements and updates the ROADWAY LIGHTING HANDBOOK in terms of the method of designing a fixed lighting system for roadways using luminance criteria as the basis for the design. Widespread use of the contents of this document should improve the utilization of energy while providing easier and faster discernment of the driving tasks at night.

Publication

55 pp (November 1983)

Availability—Government Printing Office
GPO 050-001-00271-0

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COMPILATION OF STATE LAWS AND REGULATIONS ON MATTERS AFFFECTING RAIL-HIGHWAY CROSSINGS

This compilation of State laws, ordinances, and regulations pertaining to rail-highway crossings is organized by State, key words, and subject. This is not a legal document, but is written in everyday language for use by laymen.

Publication

FHWA-TS-83-203 425 pp (April 1983)

Availability—Office of Implementation, HRT-20
—FRA, Office of Safety (RRS-12)

FUNCTIONAL REQUIREMENTS OF HIGHWAY SAFETY FEATURES

This manual describes how various roadway hardware, and roadside safety features work and why they are used. In the manual, factors related to the various features are identified to show how these may adversely affect the intended performance of the safety feature. The manual is of interest to engineers and other professionals involved with safety program activities.

Publication

FHWA-TS-81-216 269 pp (1981)

Availability—RD&T Report Center, HRD-11
—Government Printing Office
GPO 050-001-00237-0

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Visual Aid

Slidetapes color/sound 15 sessions at approximately 45 minutes each (loan)

Availability—FHWA Regional Offices

GUIDE FOR SELECTING, LOCATING, AND DESIGNING TRAFFIC BARRIERS

This guide, developed under the guidance of the AASHTO Task Force for Traffic Barrier Systems, presents the results of a synthesis of current information on the various elements of traffic barrier systems. Criteria for these elements are summarized for each of the four basic traffic barrier systems–roadside barriers, median barriers, bridge rails, and crash cushions. A chapter on a cost–effective selection procedure provides an alternate approach to the more conventional means of establishing barrier need and a barrier selection if warranted.

Publication

322 pp (1977)

Availability—American Association of State Highway and Transportation Officials

Visual Aid

Slidetape color 8 modules 3½ hours (loan) (October 1980) There is a module for each chapter in the Guide. However, each of the modules is "stand alone" and can be used independently.

Availability—RD&T Report Center, HRD–11
—FHWA Regional Offices

GUIDELINES FOR APPLYING CRITERIA TO DESIGNATED ROUTES FOR TRANSPORTING HAZARDOUS MATERIALS

The guidelines explain techniques that may be used for evaluating alternative highway routes for hazardous materials movements. The routing methods are described in readily understandable terms and are intended for use by State officials, planners, and engineers. The guide may be used to evaluate Interstate highways, urban arterials, and rural highways according to the risks that hazardous materials movements on these roadways present to nearby populations and property.

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Publication

FHWA–IP–80–15 67 pp (November 1980)

Availability—Government Printing Office
GPO 050–001–00198–5

GUIDELINES FOR SELECTING A COST EFFECTIVE SMALL HIGHWAY SIGN SUPPORT SYSTEM

This user guide describes an analysis procedure for assessing the safety and cost effectiveness of various types of small highway sign support systems. The recommendations cover sign supports which can safely respond to impact by vehicles weighing approximately 2,250 lbs.

Publication

FHWA–IP–79–7 83 pp (December 1979)

Availability—NTIS PB 297406AS

HIGHWAY SAFETY ENGINEERING STUDIES—PROCEDURAL GUIDE

This manual describes engineering studies used to investigate hazardous highway locations. The manual includes guidelines for the planning and conduct of the studies and the applications of the study results. The manual is of interest to engineers and other professionals involved in highway safety and/or traffic operations.

Publication

FHWA–TS–81–220 499 pp (1981)

Availability—Government Printing Office
GPO 050–001–00240–0

HIGHWAY SAFETY EVALUATION—PROCEDURAL GUIDE

This manual describes procedures for evaluating the safety benefits of highway safety programs and projects. The manual covers the selection of "measures of effectiveness," statistical controls, economic analysis, and evaluation documentation. The manual is of interest to State and local highway engineers involved in safety program activities.

Publication

FHWA–TS–81–219 404 pp (1981)

Availability—Government Printing Office
GPO 050–001–00242–6

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HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP)

This manual describes the development of a highway safety improvement program in either State or local jurisdictions. The process provides flexibility to let the program suit the jurisdictions unique capabilities and needs. The steps described include the collecting of data, identifying hazardous locations, conducting engineering studies, establishing priorities, implementing improvements, and evaluating results. The manual will be of interest to engineers and other professionals involved in the highway safety improvement program.

Publication

FHWA-TS-81-218 263 pp (1981)

Availability—Government Printing Office
GPO 050-001-00241-8

RAIL-HIGHWAY CROSSING RESOURCE ALLOCATION PROCEDURE-USERS GUIDE

This procedure consists of the DOT Accident Prediction Formula, which predicts the number of accidents at crossings, and the resource allocation model, which nominates crossings for improvement on a cost-effectiveness basis, and recommends the type of warning device to be installed.

Publication

FHWA-IP-82-7 83 pp (December 1982)

Availability—Office of Implementation, HRT-20
—FRA, Office of Safety (RRS-12)
—NTIS PB 84180306

RAILROAD-HIGHWAY GRADE CROSSING HANDBOOK

This handbook is a collection of applicable concepts, technology and practice, and provides information that can be utilized to improve the safety and efficiency of railroad-highway grade crossings.

FHWA-TS-78-214 241 pp (August 1978)

Availability—Government Printing Office
GPO 050-005-00027-5

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RAILROAD–HIGHWAY GRADE CROSSING SURFACES

This report gives information on currently available types of surfaces and serves as an aid in choosing physically and economically suitable surfaces. Topics presented include surface materials, surface types, stabilization fabrics, surface economics, and a list of manufactures.

FHWA–IP–79–8 65 pp (August 1979)

Availability—Government Printing Office
GPO 050–005–00031–3
—Federal Aid Division (HNG–10)

SAFETY DESIGN AND OPERATIONAL PRACTICES FOR STREETS AND HIGHWAYS

This notebook provides practical state–of–the–art information for the application of traffic safety in the design and operation of streets and highways. It is intended for use as a reference document by those involved in design, construction and maintenance.

Publication

FHWA–TS–80–226 300 pp (May 1980)

Availability—Government Printing Office
GPO 050–001–00180–2

SMALL SIGN SUPPORTS

This film describes the scope of small sign use within highway jurisdictions, crash testing carried out to isolate those support types which will respond satisfactorily to small auto impacts, and highlights of the procedure to be considered in making a cost–effectiveness analysis.

Visual Aid

16 mm film color/sound 30 minutes (loan)
(December 1979)

Availability—RD&T Report Center, HRD–11
—FHWA Regional Offices

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STATE OF THE PRACTICE IN SUPPORTS FOR SMALL HIGHWAY SIGNS

This reports provides statistical data on sign use, design data, cost data, and maintenance data on small sign supports in use throughout the country. Methods of surveying the supports are described and significant findings are summarized.

Publication

FHWA-TS-80-222 290 pp (April 1980)

Availability—NTIS PB 297408AS

SELECTION OF COST-EFFECTIVE COUNTERMEASURES FOR UTILITY POLE ACCIDENTS—USERS MANUAL

Guidance for conducting a site specific analysis of roadway sections relative to utility pole accident problems and treatments is provided. A computer program and manual analysis procedure for cost-effective analysis are described. The contents are of use in making plans for new utility facilities, analyzing potential pole accident problems and selecting appropriate accident countermeasures.

Publication

FHWA-IP-84-13 308 pp (September 1984)

Availability—Office of Implementation, HRT-20

Computer Program

Computer Program Apple, IBM P.C., (P-system, DOS)

Availability—Office of Implementation, HRT-20

THE COLLECTION OF WORK ZONE ACCIDENT DATA

This is a final report describing the development of a data collection and processing procedure for construction, maintenance or utility area traffic accidents. The report describes the nine-State survey which provided the basis for the procedure, the details of the procedure, and the two State trials which were conducted to verify and refine the procedure. A detailed description of the procedure may be found in the "Work Zone Accident Data Process" user manual.

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Publication

FHWA-RD-82-501 98 pp (1982)

Availability—NTIS

TRAFFIC BARRIERS ON SLOPES

This film summarizes research and development work on the U-Beam, Cable, and thrie-beam traffic barriers located on sloping embankments. Computer simulation and crash tests suggest that on slopes, the cable barriers were more effective than the U or thrie beam types and that the lateral locations between 10 and 12 feet from the shoulder formed a critical region within which the capability of a barrier could be drastically reduced.

Publication

FHWA-IP-84-8 Brochure 2 pp (July 1984)

Availability—FHWA Regional Offices
—RD&T Report Center, HRD-11

Visual Aid

Film 15 minutes color/sound

Availability—National Audiovisual Center (Purchase Only)
—FHWA Regional Offices
—RD&T Report Center, HRD-11

WORK ZONE ACCIDENT DATA PROCESS

The "Work Zone Accident Data" manual describes a data collection and processing procedure intended for construction, maintenance, or utility work zone traffic accidents. The manual relates to both the short-range need for accident information to provide immediate feedback for correction of traffic control deficiencies, and the long-range need to provide the basis for accident summaries and statewide traffic control standards. It is intended for State highway agency construction and maintenance field supervisors and staff, district level engineers, and headquarters level construction and maintenance engineers and accident data specialists.

Publication

FHWA-IP-82-15 91 pp (1982)

Availability—Government Printing Office
GPO 050-001-00258-2

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TRAFFIC OPERATIONS

Delineation

CONSTRUCTION ZONE DELINEATION (RAISED PAVEMENT MARKERS)

The report summarizes the results of a series of projects to evaluate the effectiveness of raised pavement markers as a means of guiding traffic through construction zones.

Publication

FHWA-TS-78-222 20 pp (June 1978)

Availability—NTIS PB 80130438

DURABLE PAVEMENT MARKING MATERIALS WORKSHOPS

The report summarizes the presentations on six different pavement marking materials. Information on material characteristics, application techniques, performance, advantages, disadvantages, and range of costs is presented

Publication

FHWA-TS-81-221 19 pp (November 1981)

Availability—NTIS PB 82140260

EPOXY THERMOPLASTIC TRAFFIC MARKING MATERIAL

The report includes background information on the development of Epoxy Thermoplastic, a discussion of the field tests and evaluation, material composition, equipment modifications, and application and material specifications

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Publication

FHWA-IP-82-14 57 pp (July 1982)

Availability—NTIS PB 84209592
—Office of Implementation, HRT-10

EQUIPMENT IMPROVEMENTS FOR REMOVAL OF TRAFFIC MARKINGS BY HIGH TEMPERATURE BURNING WITH EXCESS OXYGEN

This report summarizes the work conducted by the Texas State Department of Highways and Public Transportation to improve the excess oxygen burner developed by Southwest Research Institute.

Publication

FHWA-TS-80-208 89 pp (January 1980)

Availability—NTIS PB 202807

EVALUATION OF RETRO-REFLECTIVE MEASUREMENT DEVICES—FINAL REPORT

The report presents the results of a study to identify and evaluate instruments capable of measuring the retro-reflectivity of pavement traffic stripes under daylight conditions.

Publication

FHWA-TS-81-213 59 pp (June 1981)

Availability—Office of Implementation, HRT-10
—NTIS PB 81243594

EVALUATION OF RETRO-REFLECTIVE MEASUREMENT DEVICES—SUMMARY REPORT

The summary report presents the results of a study to identify and evaluate instruments capable of measuring the retro-reflectivity of pavement traffic stripes under daylight conditions.

Publication

FHWA-TS-81-212 12 pp (January 1982)

Availability—Office of Implementation, HRT-10
—NTIS PB 81243602

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EVALUATION OF SNOWPLOWABLE MARKERS

Five different snowplowable markers were evaluated under similar traffic and snowplowing operations. The Stimsonite 96, Dura-Brite and recessed markers were found to be acceptable snowplowable markers.

Publication

FHWA-TS-82-222 36 pp (October 1982)

Availability—RD&T Report Center, HRD-11

FIELD EVALUATION OF A GENERIC THERMOPLASTIC PAVEMENT MARKING MATERIAL

This report summarizes the results of a study to develop and field test a generic hydrocarbon based thermoplastic striping material.

Publication

FHWA-TS-83-201 20 pp (April 1984)

Availability—RD&T Report Center, HRD-11
—NTIS PB 84209584

IMPROVED STRIPE REMOVAL BY HIGH TEMPERATURE BURNING WITH EXCESS OXYGEN

The report provides details for the design, construction, and maintenance of the modified excess oxygen burner for stripe removal.

Publication

FHWA-IP-80-6 27 pp (January 1980)

Availability—NTIS PB 80201627

Visual Aid

16 mm color/sound 10 minutes (loan) (1980)

Availability—RD&T Report Center, HRD-11
—Office of Implementation, HRT-10
—FHWA Regional Offices

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PERMANENT LANE MARKINGS (RECESSED LANE EDGE STRIPE)

The report summarizes an evaluation of different methods of cutting recessed stripe grooves and various pavement marking materials placed into the recesses.

Publication

FHWA-TS-82-204 24 pp (July 1981)

Availability—NTIS PB 82105446

POST MOUNTED DELINEATORS

This report summarizes the results of an evaluation of post mounted delineators conducted by eight State highway agencies.

Publication

FHWA-TS-83-206 35 pp (July 1983)

Availability—RD&T Report Center, HRD-11
—NTIS PB 84178854

Visual Aid

This film presents both night and day scenes of four post-mounted delineators and discusses the advantages and disadvantages of each of the four types of posts.

film color/sound 20 minutes (July 1983)

Availability—Office of Implementation, HRT-10
—RD&T Report Center, HRD-11

REFLECTIVE MARKER PAINT STRIPE SKIPPER INSTRUMENTS

The report summarizes information on two instruments that are attached to a striping machine that automatically cuts off the flow of paint in front of the marker and turns it back on just past the marker.

Publication

FHWA-TS-81-205 7 pp (February 1981)

Availability—Office of Implementation, HRT-10
—NTIS PB 81241515

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ROADWAY DELINEATION PRACTICES HANDBOOK

This handbook provides the practicing engineer a convenient guide for determining the most effective delineation techniques for a given set of circumstances.

Publication

FHWA-IP-81-5 109 pp (September 1981)

Availability—RD&T Report Center, HRD-11
—NTIS PB 82207101

RAISED PAVEMENT MARKERS AT HAZARDOUS LOCATIONS

This report summarizes the results of a field evaluation of raised pavement markers at potentially hazardous locations. The evaluations were conducted by 11 State highway agencies.

Publication

FHWA-TS-84-215 74 pp (June 1984)

Availability—RD&T Report Center, HRD-11

RAPID SET EPOXY ADHESIVE FOR RAISED PAVEMENT MARKERS

The report summarizes the results of a project to develop and field test a rapid set epoxy adhesive for raised pavement markers.

Publication

FHWA-TS-83-209 19 pp (August 1983)

Availability—NTIS PB 84149954

SNOWPLOWABLE RAISED PAVEMENT MARKERS

The New Jersey Department of Transportation developed a slidetape program highlighting their development and field trials of a snowplowable raised pavement marker known as the Stimsonite 99. They suggest the application of this delineation treatment in areas of light-to-moderate snowfall.

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Visual Aid

Slidetape 13 minutes 35mm 41 slides (October 1976)
Cassette tape with silent pulse and separate narrative

Availability—FHWA Regional Offices

SURFACE PREPARATION PRIOR TO THE APPLICATION OF PAVEMENT MARKINGS

This report presents the results of a study to determine the effects of surface preparation (brushing) prior to the application of painted markings. It was found that brushing did not significantly extend the service life of the traffic paint.

Publication

FHWA-TS-80-207 15 pp (January 1980)

Availability—Office of Implementation, HRT-10
—NTIS PB 80137326

TRAFFIC STRIPE REMOVAL

This comprehensive summary of current methods to remove unwanted pavement markings includes a brief description of each method, effectiveness, problems and cost data.

Publication

FHWA-TS-79-227 60 pp (July 1979)

Availability—OST Technology Sharing Program (I-30)
—NTIS PB 80129240

Traffic Engineering

A FREEWAY MANAGEMENT HANDBOOK

Provides users with a set of guidelines for the planning design, operation, and maintenance of various type of Freeway management systems.

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Topics include ramp metering, incident detection and response surveillance and motorist information, simulation models, hardware, and others.

Publication

FHWA-IP-84-1	Volume I	– Overview	86 pp (1984)
FHWA-IP-84-2	Volume II	– Planning and Design	86 pp (1984)
FHWA-IP-84-3	Volume III	– Operations and Maintenance	86 pp (1984)
FHWA-IP-84-4	Volume IV	– Annotated Bibliography	86 pp (1984)

Availability—Office of Implementation, HRT-20

A METHOD FOR ESTIMATING FUEL CONSUMPTION AND VEHICLE EMISSIONS ON URBAN ARTERIALS AND NETWORKS

This manual describes a relatively easy and inexpensive technique for computing fuel consumption and vehicle emission values for urban traffic flow. Figures and tables are provided for fleet average passenger cars as well as trucks and busses. A sample problem is included to describe the step-by-step computations and illustrate the various practical uses of the method.

Publication

FHWA-TS-81-210 55 pp (1961)

Availability—Government Printing Office
GPO 050-001-00221-3

COMPUTER CONTROLLED TRAFFIC SIGNAL SYSTEMS

The "COMPUTER CONTROLLED TRAFFIC SIGNAL SYSTEMS" handbook was developed to acquaint traffic operations personnel at all government levels with the technical and management procedures required for the development of an efficient computer controlled traffic signal system. The handbook is an updated version of the student workbook which was used in the FHWA sponsored "Computerized Signal Systems" training course. The handbook has been designed to parallel the steps that must be taken to acquire an operational traffic control system from the initial identification of a requirement for such a system through the operation and maintenance of the system. At each step in the development process, both the technical and management concepts required to successfully achieve that step are introduced. The concepts presented in the "COMPUTER CONTROLLED TRAFFIC SIGNAL SYSTEMS" handbook will provide valuable information that will enable users to avoid many of the pitfalls asociated with the acquisition of a computer controlled traffic signal system.

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Publication

FHWA-IP-82-21 343 pp (December 1982)

Availability—NTIS PB 83257089
—Government Printing Office
GPO 050-001-00257-4

FREEWAY MANAGEMENT SLIDE-TAPE

Provides a review of Freeway Management without getting too involved in technical details. Discusses problems of freeway congestion and types of solutions available, with an emphasis on financial aspects.

Visual Aid

Slidetape 20 minutes color/sound (August 1984)

Availability—FHWA Regional and Division Offices
—RD&T Report Center, HRD-11

GUIDELINES FOR SIGNALIZED LEFT TURN TREATMENTS

This report presents easy-to-use guidelines for selecting the "best" left-turn treatment to implement at a signalized intersection. This guide will aid in the design and application of left-turn treatments.

Publication

FHWA-IP-81-4 37 pp (November 1981)

Availability—Government Printing Office
GPO 050-001-00243-4

HANDBOOK OF COMPUTER MODELS FOR TRAFFIC OPERATIONS ANALYSIS

This handbook has been prepared to inform the practicing traffic engineer of the computer models which are available for developing and evaluating practical day-to-day transportation system problems. This handbook provides sufficient information to permit the reader to understand the practical applications of the more significant models and to select those models which would be most beneficial considering the availability of personnel and equipment.

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Publication

FHWA-TS-82-213 287 pp (December 1982)

Availability—Government Printing Office
GPO 050-001-00276-1

HIGH OCCUPANCY VEHICLE FACILITY DEVELOPMENT, OPERATION AND ENFORCEMENT

This report provides guidance on the planning, design, operation, and enforcement of HOV facilities. The report was prepared in two volumes and both volumes are used as textbooks in a two-day training course. Volume I is a stand-alone document that creates an awareness of the need for HOV projects and depicts various HOV treatments. Volume II is a complementary document that provides warrants for selecting potential HOV treatments.

Publication

FHWA-IP-82-1 (Volume I and II) (April 1982)

Availability—NTIS PB 83126151

Volume I

Availability—Government Printing Office
GPO 050-001-00249-3

Volume II

Availability—Government Printing Office
GPO 050-001-00247-7

HIGHWAY ADVISORY RADIO-SLIDETAPE

This slidetape is intended to familiarize highway professionals with the concept of the Highway Advisory Radio (HAR) system and to promote its use. The slidetape will be of interest to potential users from both a technical and decision-making standpoint. Highway Advisory Radio operates as a travel information station and is licensed under the Federal Communications Commission. Radio messages are transmitted at either 530 or 1610 kHz on standard AM car radios. Primary applications of HAR include traffic routing, parking information, and inclement weather advisories. The slidetape presentation explains the history, system components, design factors, transmission options, operational status, and available documentation.

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Visual Aid

35 mm slidetape 25 minutes (April 1983)

Availability—Office of Implementation, HRT-10
—FHWA Field Offices
—State Highway Departments
—RD&T Report Center, HRD-11

PLANNING AND SCHEDULING WORK ZONE TRAFFIC CONTROL—USER GUIDE

This guide provides highway, traffic, and design engineers with analytical procedures that can be applied in the early planning and design stages of a highway construction project. The procedure will allow the most appropriate traffic control strategy to be selected.

Publication

FHWA-IP-81-6 66 pp (October 1981)

Availability—Government Printing Office
GPO 050-001-00235-3
—Office of Implementation, HRT-20

PUBLIC TRANSPORTATION-AN ELEMENT OF THE URBAN TRANSPORTATION SYSTEM

Although intended primarily for use with the training course, this student textbook can also be used as a self-programmed instruction manual. The textbook is intended to broaden the reader's overall knowledge of public transit by defining various types of public transportation and describing information sources related to the planning, design, operation and maintenance of transit systems. Emphasis is placed on the interrelationships between various modes of transportation in the urban area.

Publication

FHWA-TS-80-211 200 pp (February 1980)

Availability—Government Printing Office
GPO 050-001-00173-0
—Office of Implementation, HRT-20

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REMOVAL OF NOT NEEDED TRAFFIC SIGNALS—A USERS GUIDE

This "Users Guide" is provided to help city, county, and State officials determine if an existing traffic signal should be removed. The guide contains suggested removal criteria along with guidelines for carrying out the actual removal. To aid in the analysis process, "Signal Removal–Worksheets" are included in the guide.

Publication

FHWA–IP–80–12 65 pp (November 1980)

Availability—Government Printing Office
GPO 050–001–00193–4

SIGNAL OPERATIONS ANALYSIS PACKAGE (SOAP)

This set of manuals provides a practical technique for developing signal timing for individual intersections. A new version of the software titled SOAP84 has been released. As this version runs on most large microcomputers, support for the hand calculator versions has been discontinued. Documentation for the changes in SOAP84 is provided on the distribution computer tape.

Publication

FHWA–IP–79–9 Vol. 1—Computational Methodology
GPO No. 050–001–00151–9
Vol. 2—User's Manual
GPO No. 050–001–00152–7
Vol. 3—Portable Calculator Routines HP67/97
GPO No. 050–001–00153–5
Vol. 4—Portable Calculator Routines SR52/TI59
GPO No. 050–001–00154–3
Vol. 5—Programmers Manual
GPO No. 050–001–00155–1

Availability—Office of Implementation, HRT–20

Visual Aid

Slidetape color/sound (1979)

Availability—RD&T Report Center, HRD–11
—FHWA Regional and Division Offices

Computer Program

1600 bpi, 80 characters per record, 50 records per block

Availability—Office of Implementation, HRT–20

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SYNTHESIS OF SAFETY RESEARCH RELATED TO TRAFFIC CONTROL AND ROADWAY ELEMENTS

This synthesis provides public officials with the results of factual research findings on the safety effects of specific design and control features to guide and support engineering decisions. Findings are reported objectively based on critical analysis of pertinent research studies. The research is synthesized in 17 chapters of a two volume report set.

Publication

Volume I

FHWA-TS-82-232 193 pp (December 1982)

Availability—Government Printing Office
GPO 050-001-00259-1

Volume II

FHWA-TS-82-233 177 pp (December 1982)

Availability—Government Printing Office
GPO 050-001-00260-4

SIGOP-III USER'S MANUAL

The SIGOP-III computer program is the third version of the SIGnal OPtimization offline program. The program is designed to provide optimal, cycle-based traffic signal timing patterns for both arterial and grid networks. A new optimization procedure was developed and a detailed representation of platoon flow is provided. Particular attention has been focused on the explicit treatment of turning movements, multiphase signal control, short-term fluctuations of volume, and saturated movements. The objective function to be minimized is expressed directly in terms of vehicle delay, vehicle stops, and a term reflecting excess queue length relative to available storage capacity, all of which are computed as an integral part of the optimization procedure. Many options are provided, including half-cycle control at lightly loaded intersections, time-space diagrams, and evaluation of existing timing plans. The required input data consists of street geometrics, traffic flow, traffic signal phasing, and minimum phase durations. This information is generally available in the traffic engineering office so the need to collect additional data is minimized. The data input format for the SIGOP-III program has been simplified and a network can be coded in less time than may be required for similar programs. The program not only optimizes splits and onsets but will also select the optimum cycle length within a specified range.

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In addition to the normal measures of effectiveness associated with traffic flow, estimates of fuel consumption and vehicle emissions are provided. The SIGOP-III computer program is written exclusively in FORTRAN (1966 standard).

Publication

FHWA-IP-82-19 130 pp (October 1982)

Availability—Office of Implementation, HRT-20

Computer Program

SIGOP-III Program Tape

Format—1600 bpi, 80 characters/record, 50 records/block, EBCDIC code

Availability—Office of Implementation, HRT-20

TIME-BASED COORDINATION UNIT SPECIFICATIONS

Report provides model specifications, recommended minimum acceptance tests, and typical application diagrams.

Publication

FHWA-IP-82-20 44 pp (August 1982)

Availability—Government Printing Office
GPO 050-001-00262-1

TRAFFIC CONTROLLER SYNCHRONIZER-FIELD TEST AND EVALUATION

Report explains the installation, testing, and evaluation of the TCS unit, and presents a benefit/cost analysis of various methods of coordination.

Publication

FHWA-TS-82-220 75 pp (August 1982)

Availability—Government Printing Office
GPO 050-001-00263-9

TRAFFIC NETWORK ANALYSIS WITH NETSIM—A USER GUIDE

This document is a user guide for the NETSIM traffic simulation model. NETSIM is an accurate representation of the effects of changes in traffic

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control and street geometry on the flow of traffic. It accurately models cars, trucks, and buses. It predicts stops, delay, average speed, fuel consumption and emissions. Field validations have found that it is usually within approximately 15 percent of the measured values.

Publication

FHWA-IP-80-3 218 pp (January 1980)

Availability—Office of Implementation, HRT-20

Computer Program

NETSIM program (300 K bytes overlaid) includes IBM and CDC Source Code

Availability—Office of Implementation, HRT-20

TYPE 170 TRAFFIC SIGNAL CONTROLLER SYSTEM—ISOLATED TRAFFIC ACTUATED PROGRAM (ITAP) DOCUMENTATION

The ITAP software documentation is an extensive 410 page document designed to provide an exhaustive description of the ITAP170 software program which should enable a programmer to alter the ITAP170 software program. It is not recommended for non-programmers.

Publication

NYDOT-IMP-81-2 410 pp (December 1981)

Availability—Office of Implementation, HRT-20 (Limited Supply)

TYPE 170 TRAFFIC SIGNAL CONTROLLER SYSTEM—LOCAL INTERSECTION PROGRAM

The Type 170 Traffic Control Signal Controller System document, "Local Intersection Program--Users Manual and Software Documentation" (LIP), describes a local intersection control for the New York/California Type 170. It is intended for traffic signal planning and operations. The manual presents operational features, general information on the control program, narrative description of program routines, flow charts, and a program listing. The local intersection control program is designed to accommodate most typical intersection control strategies. Its phasing performs as if it were NEMA dual ring or single ring controller with from two to eight phases. It can function in semi-actuated, fully actuated, or volume-density models. The software operates in and with the California/New York Type 170 Traffic Signal Controller System.

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Publication

FHWA-IP-79-10 (August 1979)

Availability—Government Printing Office
GPO 050-001-00168-3
—Office of Implementation, HRT-20

TYPE 170 TRAFFIC SIGNAL CONTROLLER SYSTEM—MICROCOMPUTER BASED INTERSECTION CONTROLLER

This report presents the design philosophy of a microcomputer-based traffic signal controller developed jointly by the States of California and New York. The controller is compared to hardwired and microcomputer-based alternatives. The system is shown to be cost competitive. The Type 170 System can be purchased using competitive bidding.

Publication

FHWA-TS-78-228 34 pp (December 1978)

Availability—Office of Implementation, HRT-20

TYPE 170 TRAFFIC SIGNAL CONTROLLER SYSTEM—OPERATIONS MANUAL FOR ISOLATED TRAFFIC ACTUATED INTERSECTIONS (ITAP REV 4)

This manual provides the signal designer and operator with instructions for use of New York State's general purpose traffic control program (ITAP170-REV4). ITAP provides the user with the capability to select a variety of operations and features with a maximum of 16 inputs and 36 outputs (36 switchpacks of three switches each). The manual covers programmable features. Also covered is data entry, the signal timing card, detector alarm, the conflict monitor and its operation, the cabinet and five design examples. A brief introduction to operation considerations is covered in an appendix.

Publication

190 pp (January 1982)

Availability—Office of Implementation, HRT-20 (Limited supply)

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TYPE 170 TRAFFIC SIGNAL CONTROLLER SYSTEM–BASIC SIGNAL SYSTEM (BASYS)—USER GUIDE

The Basic Signal System (BASYS) is a set of two independent but compatible programs. The first is Basic Arterial Master (BAM) and the second is Basic Arterial Local intersection (BALI). General features of the system include six plans plus free operation. Each plan has a background cycle length, individual noncoordinated phase force offs and three splits. BASYS selects plans by police manual select, time of day/day of week and a very simplified traffic responsive. BASYS will function either with modem interconnect or 7 wire inter–connect. By placing both the master and the local on the same chip, a simple form of time base interconnect is possible.

Publication

94 pp (February 1982)

Availability—Office of Implementation, HRT–20 (Limited Supply)

TYPE 170 TRAFFIC SIGNAL CONTROLLER SYSTEM—DIAMOND INTERCHANGE PROGRAM—SOFTWARE DOCUMENTATION

The Diamond Interchange Program software documentation is intended for software engineers who may wish to update or modify the Diamond Interchange Program (DIP). (See entry for Diamond Interchange Program—User Manual.)

Publication

FHWA–IP–80–5 128 pp (December 1980)

Availability—Office of Implementation, HRT–20
—Government Printing Office
GPO 050–001–00256–6

TYPE 170 TRAFFIC SIGNAL CONTROLLER SYSTEM—DIAMOND INTERCHANGE PROGRAM—USERS MANUAL

This report is a user manual for the nonproprietary Diamond Interchange control program for the Type 170 System. The Diamond Interchange Program (DIP) can function in one of three modes. These are (1) four phase two overlap, (2) three phase lag, (3) fully actuated. This program allows one controller and cabinet to control the two legs of a Diamond with a single unit and without a coordinator unit. In addition, DIP can act as a master for a modem interconnect or a 7 wire interconnect system.

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Publication

FHWA-IP-80-4 84 pp (December 1980)

Availability—Office of Implementation, HRT-20

TYPE 170 TRAFFIC SIGNAL CONTROLLER SYSTEM—HARDWARE SPECIFICATION

A purchase order specification prepared by California and New York. The specification has been used to purchase over 1,100 Type 170 systems. It defines the controller, cabinets, load switches, detectors, and other components.

Publication

FHWA-IP-78-16 160 pp (December 1978)

Availability—Office of Implementation, HRT-20

TYPE 170 TRAFFIC SIGNAL CONTROLLER SYSTEM-ISOLATED TRAFFIC ACTUATED PROGRAM (ITAP)—SUMMARY

The ITAP Summary is a brief introduction to the New York isolated traffic actuated program. This highly flexible program can function as a two through four phase single ring controller and as a five through eight phase dual ring controller. It can be programmed for 6 phase sequential dual ring operation. The program is currently being used at several hundred locations in New York State.

Publication

NYDOT-IMP-81-1 38 pp (October 1981)

Availability—Office of Implementation, HRT-20

URBAN TRAFFIC CONTROL SYSTEM FIRST GENERATION FORTRAN IV OVERLAY SOFTWARE (EXTENDED VERSION)

The Urban Traffic Control System (UTCS) research and development effort by the Federal Highway Administration has been underway for several years. The most recently completed effort provides a FORTRAN software package which has general application and is adaptable to most cities. The documentation for this program has been divided into two areas.

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The Executive Summary provides a brief description of the control software and is intended for those desiring a general knowledge of the program, whereas the complete software documentation is intended for those who want to know the specifics of the program. The computer program tape is also available to potential users.

Publication

Executive Summary

FHWA-TS-79-222 45 pp (May 1979)

Availability—Office of Traffic Operations, HTO-23

Volume 1—Software Description

Volume 2—Interface Manual

Volume 3—Glossary of Terms

Volume 4—Operator's Manual

Volume 5—Data Base Management Manual

FHWA-IP-79-4 1200 pp (May 1979)

Availability—Office of Implementation, HRT-20

Volume 6—Program Flow Charts

These full-size flow charts are an integral part of the documentation and are included with FHWA-IP-79-5

FHWA-IP-79-5 (17" x 22") 42 pp (May 1979)

Availability—Office of Traffic Operations, HTO-23

Computer Program

UTCS Extended Version Program Tape

Format—1600 bpi, 80 characters/record, 50 records/block, ASCII code.

Availability—Office of Implementation, HRT-20

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URBAN TRAFFIC CONTROL SYSTEM HARDWARE—A SPECIFICATIONS CHECKLIST

This manual is based on equipment specified for the FHWA Urban Traffic Control/Bus Priority System in Washington, D.C. The specifications have been generalized and condensed into a checklist format to serve as a guide in checking equipment specifications for a similar control system.

Publication

FHWA-IP-76-1 156 pp (June 1978)

Availability—NTIS PB 80102023

UTCS—FUNCTIONAL DESCRIPTION—ENHANCED FIRST GENERATION SOFTWARE.

Computer-based traffic control systems came into prominence less than a decade ago. Since that time a number of systems have been installed by different contractors using several different methods and procedures. With software, this has resulted in a lack of desirable design standardization, which has tended to inhibit any significant trend toward lower user acquisition costs, and has fostered confusion in both industry and the marketplace as to an effective means of configuring and implementing economical computer-based traffic control systems. Work by the Federal Highway Administration and various industry contractors on the initial phases of the Urban Traffic Control System (UTCS) program established the feasibility of a generalized software system. However, because the work was experimental, the final software configuration did not contain various operational features that have since been determined to be desirable. Thus, the FHWA decided to incorporate the proven functions of the original UTCS software into an enhanced software package that would be compatible with the 16-bit and 32-bit minicomputer traffic control systems in current use, as well as the system configurations that could be anticipated through the 1980's. The subject report is being distributed as the first in a series of documents, which are being developed under an Office of Implementation contract, to provide documentation for the UTCS Enhanced First Generation Software. The report describes the functional elements of the enhanced software, and the minimum hardware and operating system program requirements necessary to implement the software.

Publication

FHWA-TS-79-228 (August 1979)

Availability—Office of Implementation, HRT-20

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Environment

A GUIDE TO VISUAL QUALITY IN BARRIER DESIGN

The guide introduces the basic principles of visual quality in general terms and illustrates the application of these principles to the design of highway noise barriers. It shows how visual design principles can be incorporated into the design process of highway noise barriers. It also illustrates the potential visual problems created by construction of noise barriers and identifies design measures which minimize their visual disruption of the environment. Color illustrations.

Publication

FHWA-IP-77-12 122 pp (December 1976)

Availability—NTIS PB 80207616

A METHOD FOR WETLAND FUNCTIONAL ASSESSMENT: VOLUME I, CRITICAL REVIEW AND EVALUATION CONCEPTS

The manual presents a state-of-the-art review of wetland functional values. The manual covers all wetland types as defined by the Fish & Wildlife Service's Classification and all the recognized wetland functions. The report examines the validity, interactions, and possible significant thresholds for the functions. The report is the basic resource document for Volume II, the FHWA assessment method.

Publication

FHWA-IP-82-23 176 pp (March 1983)

Availability—Office of Implementation, HRT-10
—Government Printing Office
GPO 050-001-00266-3
—NTIS PB84241157

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A METHOD FOR WETLAND FUNCTIONAL ASSESSMENT: VOLUME II, FHWA ASSESSMENT METHOD

This manual provides a rapid assessment method for assessing wetland functional values. Functions covered include groundwater recharge and discharge, flood storage and desynchronization, shoreline anchoring, sediment trapping, nutrient retention and removal, food chain support, fish & wildlife habitat, and active and passive recreation. The method is qualitative and can be used to assess the values of one or more wetlands or to compare wetlands.

Publication

FHWA-IP-82-24 134 pp (March 1983)

Availability—NTIS PB84241165
—Office of Implementation, HRT-10
—Government Printing Office
GPO 050-001-00267-1

BROWN TROUT, YELLOW BULLDOZERS AND BLACKTOP, THE STORY OF TEN MILE CREEK

The film shows that relocating a stream can be beneficial to the stream as well as the highway. To build a portion of I-70 through the Colorado Rockies a section of Ten Mile Creek had to be relocated. The project was designed and constructed through the cooperation of the Colorado Division of Highways, Division of Wildlife, U.S. Forest Service, Federal Highway Administration, and Colorado Trout Unlimited.

Visual Aid

16 mm film 26 minutes color/sound (1977)

Availability—RD&T Report Center, HRD-11
—FHWA Regional Offices

GUIDELINES FOR THE MEASUREMENT OF INTERSTATE MOTOR CARRIER NOISE EMISSIONS

The manual provides a basic understanding of the elements of the measurement of sound, from motor vehicles in particular, and the provisions and requirements of the Federal interstate motor carrier noise emission regulations.

Publication

FHWA-TS-77-222 95 pp (1977)

Availability—Operations Division (HMC-10)
—Bureau of Motor Carrier Safety

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HIDDEN BEAUTY

This film emphasizes the enhancement of roadside beauty through effective junkyard control. It illustrates the principles, concepts, and practical applications of Federal and State legislation.

Visual Aid

16 mm film color/sound 26 minutes (1977)

Availability—RD&T Report Center, HRD-11
—Real Estate Division, HRW-12
—FHWA Regional Offices

HIGHWAY AIR QUALITY

Publication

Vol. I-II (Set)

Availability—NTIS PB 244680AS

Vol. I—Design of Monitoring Surveys

This volume enumerates the factors that should be taken into account when determining the need for air monitoring, setting objectives for the study, designing the survey, selecting monitoring equipment, and evaluating the results.

FHWA-IP-75-1 198 pp (March 1975)

Availability—NTIS PB 244681AS

Vol. II—Monitoring Manual

This volume describes how monitoring equipment works, various sampling methods, importance of calibration, and how to obtain the equipment needed for the study. It does not describe specific details for operating any particular type of air monitoring instrument.

FHWA-IP-75-2 145 pp (March 1975)

Availability—NTIS PB 244682AS

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HIGHWAY NOISE MEASUREMENTS FOR VERIFICATION OF PREDICTION MODELS

This volume contains a compilation of raw data obtained during a four-State noise measurement project sponsored by FHWA. Four measurement sites in each state were established. Three 50-minute continuous measurements were performed at each of three sites with one site being monitored for 24 hours.

Publication

DOT-TSC-FHWA-78-1 770 pp (1978)

Availability—NTIS PB 279018AS

HIGHWAY POLLUTION DISPERSION: AIR QUALITY IN THE RIGHT OF WAY

Film depicts phenomena of pollution mixing and dispersion occurring in the highway right-of-way as a result of air flow patterns around moving vehicles and adjacent land or manmade structures. Film also presents results of research in this area.

Visual Aid

16 mm 20 minutes color/sound (1977)

Availability—National Audiovisual Center No. A00442
—RD&T Report Center, HRD-11
—FHWA Regional Offices

HIGHWAYS AND WETLANDS: VOLUME I, INTERIM PROCEDURAL GUIDELINES

Volume I is a compilation of practical guidelines to implement Federal and State laws and regulations concerning the protection of wetlands. The report is organized in accordance with the phases normally considered in highway development, construction, and operation. This Volume also contains a glossary of terms relating to wetlands and wetland protection.

Publication

FHWA-IP-80-11 99 pp (July 1980)

Availability—NTIS PB 81242083

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HIGHWAYS AND WETLANDS: VOLUME II, IMPACT ASSESSMENT, MITIGATION, AND ENHANCEMENT MEASURES

Volume II is a scientific and technical discussion of highways and wetlands. It is intended to assist highway professionals in understanding the technical basis for the guidelines presented in Volume I. The report is organized into sections by wetland type, as defined by the U.S. Fish and Wildlife Service's new classification system. Each chapter is further broken down by phases of highway development, construction, and operation.

Publication

FHWA-IP-80-11 171 pp (July 1980)

Availability—NTIS PB81242091

HIGHWAYS AND WETLANDS: VOLUME III, ANNOTATED BIBLIOGRAPHY

This Volume is a selected bibliography of scientific and technical reports concerned with wetlands. The references are divided into 12 topical areas to assist in finding needed information. Each reference is annotated.

Publication

FHWA-IP-80-11 81 pp (July 1980)

Availability—NTIS PB81242109

MOTORISTS INFORMATION SERVICES

A booklet and slide presentation have been prepared to assist States in developing motorists' information systems. Both items include a brief history of motorists' information services, a background on the current situation created by restrictions on outdoor advertising, and a review of various techniques currently used by State highway departments to meet motorists' needs.

Publication

FHWA-TS-80-201 35 pp (November 1980)

Availability—Government Printing Office
GPO 050-001-00203-5

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Visual Aid

Slidetape 30 minutes (loan) (November 1980)

Availability—RD&T Report Center, HRD–11

NOISE BARRIER DESIGN HANDBOOK

This handbook is intended to be a tool for use by the highway designer to aid in the design of noise abatement barriers. It provides a means of defining the geometric configuration of a barrier to produce a desired noise reduction, and also provides a design evaluation and selection procedure in which specific barriers are detailed, and then evaluated in terms of cost, acoustical characteristics, and nonacoustical characteristics (such as durability, ease of maintenance, safety, esthetics and community acceptance).

Publication

FHWA–RD–76–58 265 pp (1976)

Availability—Office of Environmental Policy, HEV–30
—NTIS PB 266378AS

POROUS FRICTION COURSES AND ROADWAY SURFACE NOISE

This study was made to determine whether skid resistant open graded asphaltic friction courses produce greater tire noise than other common highway surfaces. Comparison was made with three surface types using three types of tires. The results indicate that open graded asphaltic friction courses produce slightly lower noise levels than the other three surfaces.

Publication

FHWA–IP–74–11 32 pp (March 1975)

Availability—NTIS PB 244624AS

RESTORATION OF FISH HABITAT IN RELOCATED STREAMS

This attractive booklet provides guidelines for restoration of streams and protection of fish habitat. It should be of interest to all groups concerned with maintenance and preservation of the natural stream environment.

FHWA–IP–79–3 105 pp (December 1979)

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Availability—Office of Implementation, HRT-10
—RD&T Report Center, HRD-11
—Government Printing Office
GPO 050-001-00167-5

ROAD TO CLEAN WATER

The film gives an overview of objectives and methods for controlling erosion on highway projects. It was developed to serve as both a public relations and training tool.

Visual Aid

16 mm movie color/sound 30 minutes (loan) (December 1974)

Availability—RD&T Report Center, HRD-11
—FHWA Regional Offices

THE AUDIBLE LANDSCAPE

This film presents a dramatization of the importance and some of the difficulties in ensuring that new land development is compatible with highway noise. The need for citizen involvement is emphasized.

Visual Aid

16 mm movie color/sound 27 minutes (loan) (1976)

Availability—Environmental Analysis Division, HEV-20
—RD&T Report Center, HRD-11
—FHWA Regional Offices

THE HIGHWAY ENGINEER'S GUIDE TO ALTERNATIVE ENERGY SOURCES AND APPLICATIONS

This guide is intended to aid the highway engineer in selecting unconventional sources of energy for such items as rest areas, maintenance facilities, and small, powered roadside hardware. In addition to methods for determining cost effectiveness and best design, the guide offers a selected bibliography of published information, a listing of persons with experience in this area, and a selection of actual case studies in highway agencies that have used alternative energy sources successfully.

Publication

FHWA-TS-80-212 144 pp (January 1980)

Availability—Government Printing Office
GPO 050-001-00176-4

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VAIL PASS HIGHWAY

This film highlights highway construction techniques used in building I–70 in the Colorado mountain environment. The film emphasizes techniques used on 2 miles of bridges, retaining walls, and manmade structures built in the Vail Pass area. The roadway was built under scrutiny of environmental groups and agencies concerned with the unique aspects of the general area.

Visual Aid

16 mm film color/sound 25 minutes (loan) (1980)

Availability—RD&T Report Center, HRD–11
—FHWA Regional Offices

WILDLIFE CONSIDERATIONS IN PLANNING AND MANAGING HIGHWAY CORRIDORS

This manual serves as a guide and information source for biologists, environmental specialists, highway personnel concerned with route selection, design, construction, operation, and maintenance of highways. The manual provides information on highway–wildlife relationships and effects; provides information sources, and "how to" guidanace for inventorying wildlife populations, assessing environmental impacts, and evaluating habitat; suggests ways of incorporating wildlife values into highway planning; and offers recommendations for managing wildlife populations within the highway right–of–way.

Publication

FHWA–TS–82–212 93 pp (July 1982)

Availability—Office of Implementation, HRT–10
—NTIS PB 83169516

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Maintenance

A MANAGEMENT CONTROL SYSTEM FOR STREET MAINTENANCE

Past efforts in maintenance management have focused on systems for State highway agencies. This user's manual by Oklahoma State University's Center for Local Government Technology provides a total systems approach for controlling all roadway expenditures for small political jurisdictions.

Publication

FHWA-IP-77-20 185 pp (Reprint June 1978)

Availability—NTIS PB 82229071

AUTOMATIC CONTROLLERS FOR HYDRAULICALLY POWERED DEICING CHEMICAL SPREADERS

This report summarizes the performance evaluation of automatic controllers by 11 users from 7 highway organizations. It describes the operation of manual and automatic controllers, provides information on manufacturers of automatic controllers, and describes a device which simplifies spreader calibration.

Publication

FHWA-RD-76-505 28 pp (August 1980)

Availability—NTIS PB 261261AS

BITUMINOUS PATCHING

This report details the results of a cooperative Value Engineering study in bituminous patching undertaken by the State highway agencies of Arkansas, Oregon, Pennsylvania, and Utah. All aspects, materials, procedures, and equipment of bituminous patching were analyzed.

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Publication

FHWA-TS-78-220 21 pp (May 1978)

Availability—OST Technology Sharing Program (I-30)
—NTIS PB 80129752

BRIDGE PAINTING

This report details the results of an indepth review of maintenance bridge painting by the States of New Jersey, New York, and Wisconsin. All aspects of bridge painting activities (material, equipment, and labor) were analyzed.

Publication

FHWA-TS-79-202 34 pp (January 1979)

Availability—NTIS PB 80131154

DEFERRED MAINTENANCE

In an effort to determine the consequences of deferred maintenance, information was gathered from the principal functional areas within six State highway agencies. A methodology was developed around information about vegetation control and drainage programs. However, the main thrust of the report deals with the principals and consequences of deferring maintenance activities and the development of guidelines for deferring maintenance.

Publication

FHWA-RD-77-502 115 pp (August 1977)

Availability—NTIS PB 283159AS

DEVELOPMENT AND EVALUATION OF A MECHANIZED PAVEMENT PATCHING MACHINE

The report describes the requirements of and search for a mechanized pothole patching machine. The Gabriel Perma-Patch Machine appeared to meet these requirements and was tested by the Colorado Department of Highways. Performance of the equipment was very good although the equipment had several mechanical breakdowns.

Publication

FHWA-TS-82-211 51 pp (1982)

Availability—NTIS PB 82262437

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DEVELOPMENT OF A HIGH PRESSURE WATER JET FOR THE RAPID REMOVAL OF CONCRETE

The report presents the results of a project to design, build, and demonstrate a prototype concrete removal system using cavitation water jet technology.

Publication

FHWA-TS-83-206 77 pp (February 1983)

Availability—Office of Implementation, HRT-10
—NTIS PB 84109909

EQUIPMENT MANAGEMENT SYSTEM MANUAL

This three-part manual provides the methodology for implementing an Equipment Management System (EMS) for State and local highway agencies. The first volume is an executive summary of current practices and benefits of EMS. Part II is the key volume and illustrates sample reports and describes their use. The mechanics of EMS are explained in the third volume and should be of special interest to a project manager who is developing an Equipment Management System.

Publication

FHWA-IP-78-11

Part I—Equipment Management Opportunities and Information System Benefits (25 pp)

Part II—Equipment Management Information Reports and Their Use (99 pp)

Part III—Appendix-Technical Guide to the Development of Management Systems (41 pp) (June 1978)

Availability—RD&T Report Center, HRD-11

EQUIPMENT MANAGEMENT SYMPOSIUM

This report capsulizes the presentations made in Sacramento, California, May 3-5, 1983 concerning Equipment Management Systems, their development and use.

Publication

FHWA-TS-83-210 29 pp (September 1983)

Availability—RD&T Report Center, HRD-11
—NTIS PB 84209147

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FIELD MAINTENANCE MANUAL FOR GEORGIA COUNTIES, LOCAL ROADS AND STREETS

This reprint of the Georgia manual for field maintenance supervisors covers specific maintenance problems and solutions for pavements, shoulders, drainage, bridges, and traffic services. It also provides recommended crew sizes, equipment, materials, and production rates.

Publication

FHWA-TS-79-218 135 pp (January 1975)

Availability—OST Technology Sharing Program (I-30)
—RD&T Report Center, HRD-11

INTEGRATION OF MAINTENANCE NEEDS INTO PRECONSTRUCTION PROCEDURES

The report identifies roadway and bridge design features that affect the normal maintainability of a highway facility. Each design feature is treated as a separate category and includes previous experiences and recommendations for minimizing the maintenance problems. Suggested methods for improving recognition of maintenance problems during preconstruction procedures are also discussed.

Publication

FHWA-TS-78-216 153 pp (April 1978)

Availability—NTIS PB 117129

MAINTENANCE AND HIGHWAY SAFETY HANDBOOK

A 1977 update of the 1970 edition which was prepared by the Highway Users' Federation for Safety and Mobility. It is intended as a reference guide for maintenance crews to interest them in watching for roadway hazards, reporting hazardous conditions, preventing accidents caused by improper maintenance, and using proper safety and signing equipment.

Publication

FHWA-TS-77-223 66 pp (1977)

Availability—RD&T Report Center, HRD-11

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METHODS OF EFFECTIVE TRANSFER AND IMPLEMENTATION OF HIGHWAY MAINTENANCE TECHNOLOGY

This report describes a study of the FHWA's maintenance technology transfer process. The study has as its major focus, the analysis of effective methods for the transfer of technology and recommendations for the FHWA to improve the delivery of research and development material.

Publication

FHWA-RD-84-501 97 pp

Availability—RD&T Report Center, HRD-11

PAVEMENT PATCHING GUIDELINES

The report presents "How-to-do-it" techniques for permanent and emergency patching of asphalt and portland cement pavements. It is designed to help city and county engineers and road foremen and superintendents maintain their roads more economically and effectively.

Publication

FHWA-TS-82-221 78 pp (1983)

Availability—RD&T Report Center, HRD-11
—NTIS PB 83183244

PROCEEDINGS OF HIGH PRESSURE SALT BRINE DEICING CONFERENCE (CONNECTICUT SYSTEM)

The report provides a complete transcript of the High Pressure Salt Brine Deicing Conference. The report describes the equipment testing, design, and performance for deicing roads.

Publication

FHWA-TS-81-202 136 pp (1981)

Availability—NTIS PB 82122284

PAVEMENT AND SHOULDER MAINTENANCE PERFORMANCE GUIDE

The Region 8 Office of the Federal Highway Administration hosted two technology transfer workshops on the maintenance of shoulders and pavements. The workshops developed a series of performance guides for seven maintenance activities. These guides outline the procedures,

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expected performance, equipment, materials, crew sizes and productivity levels for each item of work. The guides will be useful to both State and local maintenance personnel as a handy state of the art reference.

Publication

FHWA-TS-84-208 42 pp (September 1983)

Availability—RD&T Report Center, HRD-11

REPAIR OF CONCRETE PAVEMENT JOINTS

This report summarizes the results of a cooperative Value Engineering study on the repair of concrete pavement joints undertaken by the State highway agencies of Iowa, Kansas, Nebraska and South Dakota. The various aspects of pavement joint repair, including both contract and maintenance work, were analyzed.

Publication

FHWA-TS-80-215 37 pp (February 1980)

Availability—NTIS PB 80133074

REPAIR OF CONTINUOUSLY REINFORCED CONCRETE PAVEMENT

This report summarizes the results of a cooperative Value Engineering study on the repair of continuously reinforced concrete pavement undertaken by the State highway agencies of Arkansas, Louisiana, Mississippi, and Texas. All aspects of the repair process were analyzed in an attempt to reduce the overall cost of this maintenance activity.

Publication

FHWA-TS-78-215 43 pp (April 1978)

Availability—Office of Implementation, HRT-10

REST AREA MAINTENANCE

This report details the results of a cooperative Value Engineering Study on rest area maintenance undertaken by the State highway agencies of Alabama, Illinois, Michigan, Virginia and Wisconsin. The study investigated all aspects of rest area maintenance.

Publication

FHWA-TS-80-210 23 pp (January 1980)

Availability—NTIS PB 80163066

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REDESIGN AND FIELD OPERATION OF A CAVITATING CONCRETE REMOVAL SYSTEM

This report includes the modifications to the cavitation water jet concrete removal system and its subsequent field evaluation.

Publication

FHWA-TS-84-207 43 pp (February 1984)

Availability—Office of Implementation, HRT-10
—NTIS PB 85105633

SHOULDER MAINTENANCE

This report summarizes the results of a cooperative Value Engineering study of shoulder maintenance undertaken by the State highway agencies of Arizona, Idaho, Iowa, and West Virginia. The study was limited to unpaved shoulders.

Publication

FHWA-TS-77-210 29 pp (May 1977)

Availability—NTIS PB 80126014

SIGN MAINTENANCE

This summary of a cooperative Value Engineering study by the State highway agencies of Arkansas, Florida, and Kentucky contains recommendations in the areas of sign proliferation, sign supports, centralized vs. decentralized sign shops, new equipment and procedures.

Publication

FHWA-TS-79-223 41 pp (July 1978)

Availability—NTIS PB 80129760

SNOW AND ICE CONTROL OPERATIONS

This report summarizes the major results of a cooperative Value Engineering study on snow and ice control operations undertaken by the State highway agencies of California, Colorado, Pennsylvania, and Utah. All aspects of snow and ice control activities (material, equipment, and labor) were analyzed.

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Publication

FHWA-TS-77-208 37 pp (March 1977)

Availability—NTIS PB 80129745

SNOW AND ICE REMOVAL FROM PAVEMENT USING STORED EARTH ENERGY

The report documents the design, construction, and a 3-year evaluation of an experimental process in which heat pipes were utilized to transfer the natural stored energy of the earth to the pavement. Included is a discussion on the economic feasibility of utilizing such systems as well as graphical representations of temperature profiles derived from thermocouple data collected at the project site.

Publication

FHWA-TS-80-227 78 pp (February 1980)

Availability—NTIS PB 81202764

SNOW AND ICE REMOVAL FROM PAVEMENTS USING STORED EARTH HEAT

Heat pipes embedded in a ramp in a West Virginia highway transferred heat from the earth to the pavement surface and thereby kept the pavement clear of snow and ice. Timelapse photography vividly illustrates the melting action.

Visual Aid

16 mm film color 25 minutes (1978)

Availability—FHWA Regional Offices

TRAFFIC STRIPING

This report details the results of a cooperative Value Engineering study by the State highway agencies of Florida, Illinois, New Mexico, and North Carolina. The report includes recommendations in the areas of paint specifications, use of recycled drums, bulk paint storage and striping operations.

Publication

FHWA-TS-79-219 53 pp (March 1979)

Availability—NTIS PB 80131147

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VALUE ENGINEERING STUDY OF DRAINAGE MAINTENANCE

The report includes recommendations in the areas of equipment selection, size of work crews, and the disposal of excavated material. The proper combinations of equipment can result in a substantial reduction in the cost of drainage maintenance.

Publication

FHWA-TS-82-223 20 pp (November 1982)

Availability—NTIS PB 83184549

VALUE ENGINEERING STUDY OF MOWING OPERATIONS

The report contains recommendations regarding types of equipment, use of herbicides, and enforcement of standards. A combination mowing and herbicide program can result in a substantial reduction in the cost of mowing activities.

Publication

FHWA-TS-82-209 33 pp (March 1982)

Availability—RD&T Report Center, HRD-11
—NTIS PB 82232872

BEST COPY AVAILABLE

PAVEMENT DESIGN, CONSTRUCTION, AND MANAGEMENT

Construction

EXAMPLES OF ENERGY AND MATERIAL CONSERVATION IN HIGHWAY WORK

The report discusses the need for saving energy and funds in highway construction. Thirteen illustrated scenarios are presented in which 13 energy-conserving ideas are discussed. Each is evaluated in terms of the potential savings in total energy and equivalent quantity of gasoline.

Publication

FHWA-TS-80-206 83 pp (August 1980)

Availability—Office of Implementation, HRT-10

IMPLEMENTATION OF CONSTRUCTION ENGINEERING MANPOWER MANAGEMENT SYSTEM–NEW MEXICO STATE HIGHWAY DEPARTMENT'S EXPERIENCE

Presents New Mexico's experience in implementing its system based on the system design manual.

Publication

FHWA-TS-80-237 54 pp (May 1980)

Availability—Office of Implementation, HRT-10

QUALITY ASSURANCE FOR LOCAL GOVERNMENTS

This manual was developed for local governments (counties, cities, and towns) to expand or initiate a quality assurance program. The manual allows the agency to design the system to suit their manpower and budget restrictions. The local agency can develop their own specifications and determine their level of quality.

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Publication

FHWA-IP-83-1 105 pp (June 1983)

Availability—Office of Implementation, HRT-10
—NTIS PB 84111509

Highway Design

ACCESS MANAGEMENT FOR STREETS AND HIGHWAYS

This report provides design details and traffic operation methods for reducing the frequency and severity of traffic accidents at driveways. Evaluation techniques along with warrants are provided to aid in the selection of the appropriate control measure. Guidance for establishing a comprehensive access management program along with a review of the access policies for the States of Wisconsin, Pennsylvania, and Colorado are included in the report.

Publication

FHWA-IP-82-3 (June 1982)

Availability—NTIS PB 83107318
—Government Printing Office
GPO 050-001-00248-5

CONTINUOUSLY REINFORCED CONCRETE PAVEMENT-WORKSHOP PROCEEDINGS

A 2-day workshop on Continuously Reinforced Concrete (CRC) Pavements was held in New Orleans, Louisiana, in February 1978. The workshop covered the design, construction, maintenance and rehabilitation of CRC pavements. This report is a complete set of proceedings of the workshop.

Publication

FHWA-TS-80-231 236 pp (August 1980)

Availability--NTIS PB 81203820

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DESIGN OF URBAN STREETS

Although intended primarily for use with a training course, this student textbook can also be used as a self–programmed instruction manual. The report provides practical, state–of–the–art information to aid in the design of street and highways. The emphasis is on the operational safety aspects of design. Application is to aid in minor design decisions on improving existing facilities as well as aiding in preparation of major reconstruction and new construction plans.

Publication

FHWA–TS–80–204 140 pp (January 1980)

Availability—Government Printing Office
GPO 050–003–00373–5

Instructor's Guide

Availability—RD&T Report Center, HRD–11

Visual Aid

The training course, "Design of Urban Streets", is available in the form of a self–learning set of ten 1–hour videotapes. These tapes are recommended for small groups with a discussion leader.

Videotape 1 hour each (set of 10) (loan) 1979

Availability—RD&T Report Center, HRD–11

FREEWAY MODIFICATIONS TO INCREASE TRAFFIC FLOW

This report addresses different roadway cross sections and modifications intended to improve freeway efficiency. It discusses the effectiveness of traffic flow improvement projects now in operation.

Publication

FHWA–TS–80–203 135 pp (January 1980)

Availability—Government Printing Office
GPO 050–003–00371–9

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CALIFORNIA TRIALS WITH LEAN CONCRETE BASE

The report covers details of large–scale field trials of lean concrete base construction. Comparisons are made with cement–treated bases.

Publication

FHWA–RD–76–503 27 pp (October 1975)

Availability—NTIS PB 254035AS

CONSTRUCTION AND REHABILITATION OF CONCRETE PAVEMENTS–A TRAINING MANUAL INSTRUCTORS GUIDE

The manual introduces the new inspector to concrete pavement construction. It covers the proper role of the inspector in ensuring quality concrete pavements, different materials and methods used in construction, and explains why various fundamental concepts and techniques are important.

Training Material

535 pp

Availability—RD&T Report Center, HRD–11

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DEVELOPMENT OF THE CALIFORNIA PAVEMENT MANAGEMENT SYSTEM

A description of California's Pavement Management System, how it was developed, how it works, and a description of the computer program. Volume 2 is a manual of rating instructions for pavement condition survey used for training and field reference. The summary is a quick overview of the system.

Vol. 1--System Description Summary Report

FHWA-HM-78-03 13 pp (1980)

Availability—Office of Implementation, HRT-10

Vol. 2--Manual of Rating Instructions

FHWA-HM-78-04 59 pp (October 1978)

Availability—Office of Implementation, HRT-10

EVALUATION OF SELECTED SOFTENING AGENTS USED IN FLEXIBLE PAVEMENT RECYCLING

Recycling asphalt concrete pavements is one alternative for pavement rehabilitation. The recycled material is mixed with varying amounts of virgin material with or without softening agents. The Utah Department of Transportation conducted tests on 23 softening agents to determine their physical properties and chemical components. The report concludes that using softening agents to restore asphalt properties is beneficial, but further testing is needed to determine their effect on long-term pavement performance.

Publication

FHWA-TS-79-204 55 pp (April 1978)

Availability—NTIS PB 290184AS

EXPERIENCE IN THE PACIFIC NORTHWEST WITH OPEN GRADED EMULSIFIED ASPHALT PAVEMENTS

This manual describes the methods used to successfully place more than 700 miles of open graded emulsified asphalt pavement in the Pacific Northwest. Included are discussions on mix design, pavement design, construction procedures and suggested specifications.

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Publication

FHWA-IP-74-3 31 pp (July 1974)

Availability—NTIS PB 236663AS

FLORIDA GUIDELINES FOR HOT-MIX RECYCLING OF ASPHALT PAVEMENTS

Guidelines including procedures and specifications, developed for Florida DOT, provide a systematic development of requirements for hot-mix recycling. They may be modified to accommodate cold mix recycling. Major features of the guidelines include general criteria for selecting projects; preliminary and final mix design procedures; specifications and test methods for recycling agents; and quality assurance methods.

Publication

FHWA-TS-81-214 130 pp (August 1981)

Availability—Office of Implementation, HRT-10

GUIDELINES FOR THE USE OF FABRICS IN CONSTRUCTION AND MAINTENANCE OF LOW-VOLUME ROADS

This volume is a compendium of experiences, information, and advice on the many uses of engineering fabrics in construction. Prepared as guidelines to be followed by Forest Service employees when constructing low-volume roads, the report contains principles which apply to all roads and highways.

Publication

FHWA-TS-78-205 171 pp (June 1977)

Availability—NTIS PB 276972AS

HIGHWAY SUBDRAINAGE DESIGN

A comprehensive treatment of highway subsurface drainage covering adverse effects of subsurface water, the data required for analysis and design, the methods and recommended criteria for groundwater control, construction and maintenance aspects of subdrainage, and the utilization of subsurface drainage for remedial purposes. Includes design charts and examples.

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Publication

FHWA-TS-80-224 162 pp (August 1980)

Availability—Government Printing Office
GPO 050-001-00195-1
—RD&T Report Center, HRD-11

HOT RECYCLING-MINNESOTA-MODIFIED DRYER DRUM

Evaluation of asphalt pavement hot recycling processes.

Publication

FHWA-TS-80-233 27 pp (1980)

Availability—Office of Implementation, HRT-10

HOT RECYCLING-WYOMING DRYER DRUM

Describes Wyoming's second recycling project in which an asphalt pavement was removed, heated and laid. This project expanded and improved the technique and operations used on earlier projects.

Publication

FHWA-TS-80-234 98 pp (1980)

Availability—Office of Implementation, HRT-10

PAVEMENT MANAGEMENT WORKSHOP-TUMWATER, WASHINGTON

Proceedings of workshop held in Tumwater, Washington, November 1977 with 11 State highway departments. Each of their pavement management systems was compared with respect to pavement monitoring and decision criteria.

Publication

FHWA-TS-79-206 530 pp (September 1978)

Availability—Office of Implementation, HRT-10

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PAVEMENT MANAGEMENT; PROCEEDINGS OF NATIONAL WORKSHOPS

Proceedings of workshops held in Phoenix, AZ (May, 1980) and Charlotte, NC (Sept 1980). The workshop topics included information acquisition and processing; planning and programming; design, construction; maintenance; rehabilitation; and field monitoring. Emphasis is on a stepwise implementation approach to pavement management.

Publication

FHWA-TS-82-203 75 pp (June 1981)

Availability—Government Printing Office
GPO 050-001-00238-8

PAVEMENT RECYCLING: SUMMARY OF TWO CONFERENCES

Summarizes two national conferences held in 1980 and 1981. Results provide guidelines and recommendations or selection, design, evaluation and administration of recycling projects (asphalt and concrete).

Publication

FHWA-TS-82-224 60 pp (April 1982)

Availability—RD&T Report Center, HRD-11

PAVING WITH SULPHUR

This movie portrays two developmental uses of sulphur in pavement construction: (1) Sulphur in Sulphur Extended Asphalt (SEA) pavements in which sulphur replaces part of the asphalt binder; and (2) sulphur in Sand-Asphalt-Sulphur (S-A-S) pavements in which sulphur, by acting primarily as a structuring agent between aggregates, allows the use of poorer-quality aggregates.

Visual Aid

16 mm film color/sound 20 minutes (loan) (1977)

Availability—RD&T Report Center, HRD-11
—FHWA Regional Offices

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PORTLAND CEMENT CONCRETE PAVEMENTS

A study of performance of existing concrete pavements to determine cause of failure and distress for plain, conventionally reinforced, and continuously reinforced pavements.

Publication

FHWA-TS-78-202 166 pp (August 1977)

Availability—NTIS PB 80116783

PROCEEDINGS OF THE NATIONAL SEMINAR ON PCC PAVEMENT RECYCLING AND REHABILITATION

Proceedings cover many aspects of PCC recycling and rehabilitation including condition surveys, drainage, joint repair, profile correction, bonded overlays, load transfer restoration, and cost.

Publication

FHWA-TS-82-208 200 pp (December 1981)

Availability—RD&T Report Center, HRD-11
—Government Printing Office
GPO 050-001-00252-3

PROCEEDINGS OF THE PORTLAND CEMENT CONCRETE PAVEMENT PATCHING CONFERENCE

This report contains several papers on patching conventional and continuously reinforced concrete pavements. Practices/procedures endorsed by the nine participating states are described.

Publication

FHWA-TS-83-211 188 pp (February 1984)

Availability—Office of Implementation, HRT-10
—NTIS PB 84212281

SAMPLE SPECIFICATIONS FOR ENGINEERING FABRICS

This volume contains specifications from six highway agencies with significant fabric experience. Engineering fabrics are used for filtration, for soil reinforcement, as separation barriers, and for a variety of other uses in construction.

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Publication

FHWA-TS-78-211 79 pp (1978)

Availability—NTIS PB 283338AS

STUDDED TIRES

Accelerated wear damage to pavement surfaces and markings caused by heavy use of studded tires has created potential safety hazards and increased maintenance costs. This slidetape illustrates some of the problems and can be used to reinforce State efforts to limit or ban use of studded tires. An illustrated script is provided as well as the narration. The tape is programmed with a Silent-Pulse Automatic Advancement.

Visual Aid

Slidetape color 9 minutes (loan) (February 1978)

Availability—FHWA Regional Offices
—RD&T Report Center, HRD-11

STUDDED TIRES IN ALASKA

This movie vividly presents Alaska's experience with studded tires. The film gives the viewer an understanding of the consequences resulting from continued use of studded tires.

Visual Aid

16 mm film color/sound (loan) 25 minutes (1974)

Availability—FHWA Regional Offices

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THE PERFORMANCE OF PAVED SHOULDERS IN ILLINOIS

The slidetape illustrates potential benefits of portland cement concrete shoulders.

Visual Aid

Slidetape color 15 minutes (loan)

Availability—RD&T Report Center, HRD-11
—FHWA Regional Offices

TRANSVERSE CRACKING OF ASPHALT PAVEMENTS

Summarizes an analysis by a study team composed of five states (Iowa, Kansas, Nebraska, North Dakota, Oklahoma). Analyzes all functions related to thermal cracking to determine how different factors might be contributing to the problem and recommends improvements.

Publication

FHWA-TS-82-205 30 pp (July 1982)

Availability—Office of Implementation, HRT-10

TRI-REGIONAL PAVEMENT MANAGEMENT WORKSHOP

Includes several papers on pavement management at national, state, and local levels; the benefits/costs of a PMS; data needs and pavement evaluation equipment; pavement monitoring, evaluation, rating and data handling procedures.

Publication

FHWA-TS-83-207 520 pp (February 1983)

Availability—Office of Implementation, HRT-10

WAR ON WET WEATHER ACCIDENTS

The narrative and graphical displays emphasize the effects of wet pavements on braking distance, cornering and vehicle maneuvers. Pertinent highway safety precautions are highlighted throughout the film. It is recommended for viewing by general audiences interested in skid resistance, tire hydroplaning and highway safety.

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Visual Aid

16 mm film color/sound 20 minutes (loan) (September 1974)

Availability—RD&T Report Center, HRD–11

WATER–IN–PAVEMENTS

Presentation emphasizes the importance of removing water from under the roadway pavement to reduce damage and shows examples of how this has been accomplished.

Visual Aid

Slidetape color 20 minutes (loan) (September 1976)

74 35mm slides with script

Availability—RD&T Report Center, HRD–11

Polymers

INTRODUCTION TO CONCRETE POLYMER MATERIALS

Text provides basic information on concrete polymer development and application. Included are discussions on concrete polymer materials development, methods of producing the materials, description of the fundamental characteristics and properties of the composites, and applications of the materials.

Publication

FHWA–RD–75–507 156 pp (April 1975)

Availability—NTIS PB 241691

Supplement No. 1

Discussions are presented on the structural properties of polymer impregnated concrete and its application in prestressed bridge deck members, polymer impregnation as a bridge deck sealant, polymer concrete shotcrete, and penetrating protective coatings.

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Publication

FHWA-RD-75-527 79 pp (November 1975)

Availability—NTIS PB 248227AS

Supplement No. 2

Laboratory demonstrations for use in concrete polymer materials training sessions are described. Experimental procedure, required equipment and sources of these materials are listed.

Publication

FHWA-RD-76-508 27 pp (June 1976)

Availability—NTIS PB 261087AS

THE USE OF POLYMER CONCRETE FOR BRIDGE DECK REPAIRS ON THE MAJOR DEEGAN EXPRESSWAY

This report describes the use of polymer concrete to repair two large holes on the Major Deegan Expressway in New York City. The materials and step-by-step procedures used are described in detail.

Publication

FHWA-RD-75-513 42 pp (January 1975)

Availability—NTIS PB 246048AS

Rapid Tests

MATERIALS AND TEST DATA INFORMATION SYSTEMS IN HIGHWAY CONSTRUCTION

This report presents basic information on automatic data processing techniques used by eight States. Batch information, on-line interactive information and on-line interactive laboratory information systems are discussed.

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Publication

FHWA-TS-78-221 156 pp (June 1978)

Availability—NTIS PB 80121247

NUCLEAR CEMENT CONTENT GAGE-COMPARISON ANALYSIS

Laboratory evaluation of two prototype nuclear cement content gages showed that variation of 22 lb/yd3 (12 kg/m3) can be expected for siliceous aggregate. For calcareous aggregate this variation will increase more than twice that for siliceous aggregate mixes.

Publication

FHWA-TS-78-201 53 pp (August 1977)

Availability—NTIS PB 284706AS

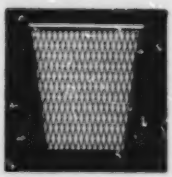
PREDICTING POTENTIAL STRENGTH OF PORTLAND CEMENT CONCRETE

This report describes a method by which concrete strength can be predicted by using a time/temperature relationship. The information is based on a West Virginia study which compared conventional 28-day strength with 24- to 48- hour old cylinder.

Publication

FHWA-TS-78-212 32 pp (February 1978)

Availability—Office of Implementation, HRT-10



Waste and Substitute Materials

FLY ASH—A HIGHWAY CONSTRUCTION MATERIAL

A user's manual on the evaluation of fly ash and the design and construction of highway embankments, fills, base courses and soil stabilization.

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Publication

FHWA-IP-76-16 177 pp (June 1976)

Availability—NTIS PB 259302

LIME/FLY ASH-STABILIZED BASES AND SUBBASES

Lime/Fly Ash-Aggregate (LFA) mixtures may be used to construct high-quality bases or subbase layers in pavement systems. This slidetape presentation summarizes the testing, design, and construction procedures followed when using LFA mixtures. Material characteristics and engineering properties are explained. The script is also available from the Office of Implementation, HRT-10 and the FHWA Regional offices.

Visual Aid

Slidetape color 35mm 20 minutes (November 1978)
(loan)

Availability—RD&T Report Center, HRD-11
—FHWA Regional Offices

RIDING ON REFUSE

This movie shows the use of incinerator residue as the aggregate in bituminous base course construction. Suitable for technical and nontechnical audiences.

Visual Aid

16 mm film color/sound 20 minutes (loan) (June 1976)

Availability—Office of Implementation, HRT-10
—FHWA Regional Offices

RUBBER ASPHALT BINDER FOR SEAL COAT CONSTRUCTION

This report discusses the development and use of rubber-asphalt binder for seal coat construction. Granulated tread rubber reclaimed from discarded automobile tires is mixed with hot asphalt to form a tough and elastic binder with less susceptibility to temperature changes. Construction procedures, cost data and suggested specifications are included.

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Publication

FHWA-IP-73-1 29 pp (February 1973)

Availability—NTIS PB 219012AS

SAND-ASPHALT-SULPHUR (S-A-S)

This report of a pavement field trial in Kenedy County, Texas, describes the procedures used to design and construct trial pavement sections in which sulphur has been used to upgrade poorly graded aggregates. A section on sulphur emissions is included.

Publication

FHWA-TS-78-204 110 pp (1977)

Availability—NTIS PB 279199AS

SULPHUR EXTENDED ASPHALT (SEA)

This report describes the procedures followed in the Lufkin, Texas field trials to design and construct trial pavement sections with sulphur extended asphalt (SEA) binders. SEA binders are binders in which sulphur replaces a significant proportion of asphalt used in conventional binders.

Publication

FHWA-TS-78-203 69 pp (1977)

Availability—NTIS PB 279093AS

SULPHUR-EXTENDED-ASPHALT FIELD TRIALS, MH-153 BRAZOS COUNTY, TEXAS: A DETAILED CONSTRUCTION REPORT

This comprehensive description of equipment, materials, quality control procedures, and construction procedures used during the construction of pavement sections with sulphur-extended-asphalt (SEA) binders also highlights design procedures and emissions control monitoring used for the project. The report's graphic account will be useful to highway professionals who plan to use SEA binders in construction.

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Publication

FHWA-TS-80-214 84 pp (1979)

Availability—Government Printing Office
GPO 050-001-00165-9
—NTIS PB 80161631

SULPHUR-EXTENDED-ASPHALT PAVING PROJECT, HIGHWAY U.S. 93-95, BOULDER CITY, NEVADA

This Sulphur Institute report describes the equipment used, procedures followed, and experiences encountered during the construction of a trial pavement with sulphur-extended-asphalt (SEA) binders in Nevada.

Publication

Construction Report 20 pp (January 1977)

Availability—Sulphur Institute

USER'S MANUAL-COAL MINE REFUSE IN EMBANKMENT CONSTRUCTION

This manual provides the information needed to use coarse anthracite and bituminous wastes in highway embankment construction. It will benefit highway and environmental planners, and those engaged in highway design, materials testing and construction. While geotechnical engineers should be consulted during the design of all highway embankments, the manual contains some elementary geotechnical data for those organizations with limited geotechnical skills.

Publication

FHWA-TS-80-213 203 pp (December 1979)

Availability—Government Printing Office
GPO 050-001-00169-1
—NTIS PB 177538

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STRUCTURAL DESIGN AND HYDRAULICS

Hydraulics and Hydrology

AERIAL DRAINAGE SURVEYS–COMPUTER DESIGN PROGRAM

A computer program has been developed to process basic aerial survey data and transform it into drainage information which can be used for design. A user's manual is also available which demonstrates how to incorporate the computer program into an automated system of data collection.

Publication

FHWA–IP–78–2 71 pp (March 1978)

Availability—NTIS PB 292825AS

Visual Aid

This slidetape presentation briefly describes the capabilities of the automated data collection system and effective procedures for operation.

Slidetape/color 20 minutes (loan) (1978)

Availability—RD&T Report Center, HRD–11
—FHWA Regional and Division Offices

Computer Program

Fortran IV

Availability—Bridge Division, HNG–30

BICYCLE-SAFE GRATE INLETS DESIGN MANUAL

This publication presents a practical design procedure for three grates which were determined through research testing to be superior in bicycle safety and hydraulic efficiency. The design manual includes design equations, example problems, computer programs, and calculator

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routines to determine grate efficiency. This material will be of interest to highway and hydraulic engineers with responsibility for the design of urban highway drainage facilities.

Publication

FHWA-IP-80-13 47 pp (December 1980)

Availability—NTIS PB 84102896

COUNTERMEASURES FOR HYDRAULIC PROBLEMS AT BRIDGES

This slidetape presentation depicts typical hydraulic hazards and documents the performance of various countermeasures at actual bridge sites. The information contained in the presentation should be of interest to highway, hydraulic, geotechnical and bridge engineers.

Visual Aid

Slidetape color 30 minutes (loan) (1980)

Availability—RD&T Report Center, HRD-11
—FHWA Regional and Division Offices

CULVERT OUTLET PROTECTION DESIGN

A computer program was developed to estimate the extent of scour at culvert outlets and to aid in the design of both rigid and rock riprapped basins. Eleven types of erosion protection are included in the computer program.

Publication

FHWA-RD-75-508 (March 1975)

Availability--NTIS PB 242730AS

Computer Program

Mini-tape 9 track 1600 bpi

Availability—NTIS PB 232796AS

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DESIGN OF URBAN HIGHWAY DRAINAGE-STATE OF THE ART

The manual describes urban storm drainage considerations and deals primarily with surface water collection and disposal and the incorporation of storage where appropriate. Available design information is reviewed and evaluated. The best available methods of analysis which can be done manually or on a programmable calculator are presented.

Publication

FHWA-TS-79-225 280 pp (August 1979)

Availability--NTIS PB 83259903
—RD&T Report Center, HRD-11

DRAINAGE OF HIGHWAY PAVEMENTS (HEC #12)

This Hydraulic Engineering Circular (HEC) provides design procedures for determining the removal of storm water from highway pavements and medians. The circular contains discussions on roadway geometry, estimation of storm water runoff, flow in medians, roadside channels, and curb gutters, and inlet types, locations and interception capacity.

Publication

FHWA-TS-84-202 151 pp (March 1984)

Availability—RD&T Report Center, HRD-11
--NTIS PB 84215003

GUIDE FOR SELECTING MANNING'S ROUGHNESS COEFFICIENTS FOR NATURAL CHANNELS AND FLOOD PLAINS

The Report provides procedures for determining Manning's roughness coefficients for densely vegetated flood plains. Photographs of flood plain segments where roughness coefficients have been verified are presented as a comparison standard to aid in assigning values to similar flood plains.

Publication

FHWA-TS-84-204 62 pp (April 1984)

Availability—NTIS PB 84242585
—RD&T Report Center, HRD-11

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A PROCEDURE FOR DETERMINING FREQUENCIES TO INSPECT AND REPAIR HIGHWAY SAFETY HARDWARE

This manual provides a practical procedure for determining time periods for inspection of highway safety hardware. It includes easy to use tables providing maximum inspection time in days and average annual accidents based on accident rates and traffic volumes.

FHWA-IP-83-4 23 pp (December 1983)

Availability—NTIS PB 84154491

HIGHWAYS IN THE RIVER ENVIRONMENT–HYDRAULIC AND ENVIRONMENTAL DESIGN CONSIDERATIONS–TRAINING AND DESIGN MANUAL

This is a training and design manual for the application of the concepts of open-channel hydraulics, fluvial geomorphology, and river mechanics to the design, maintenance, and related environmental problems associated with highway crossings and encroachments.

Publication

420 pp (May 1975)

Availability—Office of Implementation, HRT-10
—R,D&T Report Center, HRD-11
—NTIS PB 84103019

HYDRAULIC DESIGN OF BRIDGES WITH RISK ANALYSIS

This manual demonstrates the implementation of design requirements for encroachments on flood plains. A simplified methodology is presented to assess the risk of economic loss caused by flooding for various design alternatives and flood frequencies.

Publication

FHWA-TS-80-226 34 pp and 2 appendixes with example reports (March 1980)

Availability—NTIS PB 81104259

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HYDRAULIC FLOW RESISTANCE FACTORS FOR CORRUGATED METAL CONDUITS

In 1970, FHWA published a report with this title based on experimental investigations of resistance factors in corrugated metal conduits. This updated report, based on test data developed since 1970, provides a basis for improving the resistance factor estimates for corrugated metal pipe.

Publication

FHWA-TS-80-216 36 pp and 5 appendixes (January 1980)

Availability—NTIS PB 84103811

HYDROLOGY FOR TRANSPORTATION ENGINEERS

This source reference manual covers the essential principles, procedures and analytical methods needed in making hydrologic studies. The manual was written with the highway engineer in mind, but the information will also interest engineers involved in hydrologic analysis for various modes of transportation.

Publication

FHWA-IP-80-1 736 pp (January 1980)

Availability—NTIS PB 84102581

Visual Aid

This is a self-instructional videotape presentation on the various hydrologic aspects associated with transportation engineering.

Videotape #32 20 1/2 hours tapes Total 10 hours color/sound (January 1980)

Availability—RD&T Report Center, HRD-11

KEYED RIPRAP

Illustrates a new installation technique for riprap which produces a dense mass of interlocked stone with a smooth, uniform surface. Keyed riprap is considered to be more effective in preventing erosion than conventional riprap and requires less maintenance.

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Visual Aid

16 mm film color/sound 15 minutes (April 1975)

Availability—RD&T Report Center, HRD-11
—FHWA Regional Offices

MANUAL FOR HIGHWAY STORM WATER PUMPING STATIONS, VOLUMES I AND II

This two-volume manual presents complete procedures for storm water pumping station design. Emphasis is given to cost-effective design procedures for minimizing operating and maintenance costs. Detailed information is provided on types of pumps, pump motors, natural gas engines, electrical systems, and wet well and piping systems.

Publication

FHWA-IP-82-17 220 pp (October 1982)

Availability—Government Printing Office
—Office of Implementation, HRT-10

Volume I

Availability—Government Printing Office
GPO 050-001-00254-0
—NTIS PB 84241017

Volume II

Availability—Government Printing Office
GPO 050-001-00253-1
—NTIS PB 84241017

STABILITY OF RELOCATED STREAM CHANNELS

This slidetape presentation illustrates the impact erosion, alignment, and vegetation have on the channel stability of larger relocated streams. Examples of successful stabilization measures for large scale river channelization projects are provided.

Visual Aid

Slidetape 20 minutes color/sound (August 1983)

Availability—RD&T Report Center, HRD-11
—FHWA Regional and Division Offices

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STRUCTURAL DESIGN MANUAL FOR IMPROVED INLETS AND CULVERTS

This manual provides structural design methods for improved inlets and culverts. Detailed information is provided on loading conditions, structural analysis, and design of culverts and their pertaining structures. Typical standard plans for improved inlets are presented in the appendix.

Publication

FHWA-IP-83-6 338 pp (June 1983)

Availability—RD&T Report Center, HRD-11
—NTIS PB 84153485

UNDERGROUND DISPOSAL OF STORM WATER RUNOFF

The manual describes procedures for evaluating the feasibility of using an infiltration drainage system and illustrates ways the system can be effectively and economically incorporated into a highway drainage system.

Publication

FHWA-TS-80-218 215 pp and 5 appendixes (February 1980)

Availability—NTIS PB 83180257

WYOMING CULVERT DESIGN SYSTEM

This report contains program documentation, user instructions, and sample problems. As an engineering tool, this system can either hydraulically design a culvert or hydraulically review an existing or proposed culvert size. The system can be used in any geographical region provided discharges, hydrographs, and flood volumes can be identified.

Publication

FHWA-TS-80-245 181 pp (December 1980)

Availability—Office of Implementation, HRT-10
—NTIS PB 84151190

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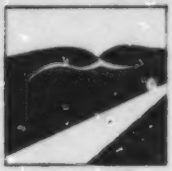

CONE PENETRATION TEST-GUIDELINES FOR PERFORMANCE AND DESIGN

The Dutch Cone Penetrometer can be effective in soils exploration with such specific uses as determining in-situ soil shear strength, pile design parameters, etc. This device has been used in Europe to obtain subsurface information for several years, but has only recently been introduced in the United States. The results are used by designers to more economically design foundation support needed for roadways and bridges.

Publication

FHWA-TS-78-209 145 pp (July 1978)

Availability—NTIS PB 100613

Visual Aid

Videotapes color (loan)

Tape 1—35 min Studio Lecture
Tape 2—15 min Field Demonstration with Special Trucks
Tape 3—15 min Field Demonstration with a Conventional Drill Rig

Availability—RD&T Report Center, HRD-11
—FHWA Regional Offices

DESIGN AND CONSTRUCTION OF SHALE EMBANKMENTS—SUMMARY

This report describes the research results and recommendations from the FHWA study entitled "Development of Methodology in Design and Construction of Compacted Shale Embankment."

Publication

FHWA-TS-80-219 30 pp (April 1980)

Availability—Office of Implementation, HRT-10

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EXPANSIVE SOILS IN HIGHWAY SUBGRADES-SUMMARY

This report describes the research results and recommendations from the FHWA study entitled "Development of Methodology for Prediction and Minimization of Detrimental Volume Change of Expansive Clays in Highway Subgrades."

Publication

FHWA-TS-80-236 22 pp (April 1980)

Availability—Office of Implementation, HRT-10

FOUNDATION DESIGN OF EMBANKMENTS ON VARVED CLAYS

This report is a condensed and reorganized version of a research report entitled "Foundation Design of Embankments Constructed on Connecticut Valley Varved Clays," prepared by MIT in 1975. The report presents procedures applicable to the foundation design of embankments constructed on soft foundations.

Publication

FHWA-TS-77-214 243 pp (May 1977)

Availability—NTIS PB 275727

FOUNDATION INSTRUMENTATION-INCLINOMETERS

The inclinometer is an instrument for monitoring the lateral deformation of embankments and structures during construction. This instrument is also a useful device for analyzing and understanding landslide movements. The reference manual provides engineers with documentation for use and details relating to the instrumentation. The videotape by Mr. Stanley Wilson (inventor of the inclinometer) acquaints highway engineers with the application of the inclinometer to situations where lateral deformation must be controlled, such as slope and embankment construction, sheet pilling, etc. Mr. Wilson describes the development of the instrument, its field use and installation, and interpretation of the field data. The reference data will provide engineers with documentation for use and details of the instrumentation.

Publication

FHWA-TS-77-219 52 pp (July 1977)

Availability—NTIS PB 80102510

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Visual Aid

Videotape color 45 minutes (loan) (July 1977)

Availability—RD&T Report Center, HRD–11
—FHWA Regional Offices

FRENCH SELF-BORING PRESSUREMETERS (PAF 68 AND PAF 72)

Two models of the Pressiometre Auto-Foreur (self-boring pressuremeter) were evaluated during an extensive program of field testing. Volume I presents the results of the evaluation of the probes. Volume II contains instructions for using the probes in the field and for plotting and interpreting the data.

Publication

Volume I—Evaluation

FHWA–TS–80–209 134 pp (February 1980)

Availability—NTIS PB 81117053

Volume II—Instructions for Field Testing

FHWA–TS–80–209 218 pp

Availability—NTIS PB 81117061
—Office of Implementation, HRT–10

HANDBOOK ON DESIGN OF PILES AND DRILLED SHAFTS UNDER LATERAL LOAD

Several methods of analysis and design of piles under lateral loading are presented in this handbook. These include a computerized method of analysis using the program COM 624, a nondimensional solution, and the Broms method. In addition, analysis of pile groups, and method of testing piles under lateral load are included. Step–by–step procedures including example problems for each method are presented to help engineers to better understand the methods shown in the handbook.

Publication

FHWA–IP–84–11 388 pp (April 1984)

Availability—Office of Implementation, HRT–10

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Computer Program

Fortran Computer Program

Availability—University of Texas

IMPORTANCE OF ADEQUATE SITE INVESTIGATION—THE REASON WHY

This film illustrates the varied and costly negative consequences which are the potential result of an inadequate site investigation for a highway construction project. The components of an adequate site investigation are outlined and a variety of modern techniques are shown. The film is intended for management level personnel from State departments of transportation.

Visual Aid

16mm film color/sound 20 minutes (October 1978)

Availability—FHWA Regional Offices

NEGATIVE FRICTION—"DOWNDRAG ON A PILE"

The settlement of soil surrounding pile foundations causes negative friction to develop between soil and pile. If not considered in the design, the resulting downdrag force can cause excessive pile settlement or other serious pile distress which can result in unsatisfactory structure performance (e.g., settlement of bridge abutments and piers). MIT has investigated negative skin friction for a number of years and has developed procedures for estimating the magnitude of pile downdrag and methods of reducing the problem.

Publication

FHWA-TS-78-210 80 pp (July 1978)

The reference manual consists of a series of graphics and narrative key points made in the videotape and includes an appendix of the MIT design manual on negative friction analysis.

Availability—NTIS PB 80100613

Visual Aid

This two-part videotape presentation by Dr. T. William Lambe of MIT summarizes both the research and the results of an MIT symposium conducted in conjunction with the research. Dr. Lambe describes the

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philosophy of his prediction technique, discusses the mechanics of negative friction and the method of analysis and correction, and presents a summary of the results of the symposium.

Videotape 57 minutes color (loan) (2 tapes)

Availability—FHWA Regional Offices
—RD&T Report Center, HPD-11

PILE DRIVING ANALYSIS WAVE EQUATION USER'S MANUAL–TTI PROGRAM

The TTI (Texas Transportation Institute) wave equation computer program was prepared to provide highway engineers with the benefits of this practical tool for analyzing pile driving problems. The program provides an excellent introduction to the wave equation concept and is considered best suited for the analysis of air/steam hammers.

Publication

Vol. I—Background

FHWA-IP-76-13.1 57 pp (April 1976)

Availability—NTIS PB 261900

Vol. II—Computer Program and Sample Problems

FHWA-IP-76-13.2 169 pp (April 1976)

Availability—NTIS PB 261901

Vol. III—Program Documentation

FHWA-IP-76-13.3 82 pp (April 1976)

Availability—NTIS PB 261902

Vol. IV—Narrative Presentation

FHWA-IP-76-13.4 49 pp (April 1976)

Availability—NTIS PB 261903

Vol. I–IV (set)

Availability—NTIS PB 261899AS

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Visual Aid

Slidetape color 48 minutes (loan) (April 1976)

(1) General Presentation, 20 minutes, 43 slides

(2) Narrative Presentation, 14 minutes, 13 slides

(3) Influence of Input Parameters, 14 minutes, 16 slides

Availability—Office of Implementation, HRT-10
—FHWA Regional Offices

Computer Program

FORTRAN IV (April 1976)

Availability—Office of Implementation, HRT-10

PROCEEDINGS OF A CONFERENCE ON SITE EXPLORATION IN ROCK FOR UNDERGROUND DESIGN AND CONSTRUCTION

A 2-day conference on site exploration in rock was held March 29-31, 1978. The focus was on the results of the research experiment conducted at the Forest Glen Station of the Washington, D.C. Metro by developers of acoustic/seismic, electromagnetic, and in-situ mechanical probes. The characteristics of each probe and the preliminary findings were discussed.

Publication

FHWA-TS-79-221 98 pp (July 1979)

Availability—NTIS PB 101157

PROCEEDINGS OF A SYMPOSIUM ON DESIGN AND CONSTRUCTION OF SLURRY WALLS AS PART OF PERMANENT STRUCTURES

A symposium on using slurry trench walls as permanent support as well as temporary ground support in transportation facilities was held in Cambridge, Massachusetts, in August 1979. The report includes all of the papers given at the symposium.

Publication

FHWA-TS-80-221 413 pp (March 1980)

Availability—Government Printing Office
GPO 050-001-00199-3
—NTIS PB 84114677

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PROCEEDINGS OF A SYMPOSIUM ON SITE EXPLORATION IN SOFT GROUND USING IN-SITU TECHNIQUES

A 3-day symposium was held May 1-3, 1978, to discuss the latest techniques for measuring soil properties in-situ. Presentations were made by speakers from France, England, and the United States. Major sessions were devoted to self-boring pressuremeters, penetration devices, and future developments.

Publication

FHWA-TS-80-202 248 pp (January 1980)

Availability—Government Printing Office
GPO 050-001-00170-5

ROCK SLOPE ENGINEERING

This reference manual, used in a series of Rock Slope Engineering Workshops, can be purchased as a complete set or by individual parts as listed below.

Publication

FHWA-TS-79-206 (January 1979) (complete set)

Availability—NTIS PB 80103294

Part A. Engineering Geology Considerations and Basic Approach to Rock Slope Stability Analysis.

Availability—NTIS PB 80103302

Part B. Methods of Obtaining Geologic Structural, Strength and Related Engineering Geology Data.

Availability—NTIS PB 80103310

Part C. Approach and Techniques in Geologic Structural Analysis.

Availability—NTIS PB 80103328

Part D. Slope Stability Analysis Methods.

Availability—NTIS PB 80103336

Part E. Rock Slope Stabilization, Protection, and Warning - Instrumentation Measures and Related Construction Considerations.

Availability—NTIS PB 80103344

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Part F. Blasting for Rock Slopes and Related Excavation Considerations.

Availability—NTIS PB 80103351

Part G. (Field Manual) Description of Detail Line Engineering Geology Mapping Method.

Availability—NTIS PB 80103369

(Appendix) Chapter 9 of Landslides: Analysis and Control (TRB Report 176).

Availability—NTIS PB 80103377

THE TEXAS QUICK-LOAD METHOD FOR FOUNDATION LOAD TESTING

This report describes a "quick-load" method developed by the Texas State Department of Highways and Public Transportation for testing piling and drilled shafts. Using this method, a load test can be completed in 1-2 hours. On small projects where the time-consuming AASHTO test cannot be economically justified, use of this test makes it feasible to use full-scale load tests to verify foundation designs.

Publication

FHWA-IP-77-8 54 pp (March 1977)

Availability—NTIS PB 267353

Visual Aid

Slidetape color 22 minutes (loan) (March 1977)

Availability—FHWA Regional Offices

WAVE EQUATION ANALYSIS OF PILE DRIVING-WEAP PROGRAM

A new advanced wave equation, designated WEAP, has been developed to more accurately model the hammer pile-soil system for analysis of pile driving problems. This problem is suitable for those who are more experienced in the use of the wave equation technique. The program can be used for analyzing all types of hammers but is particularly recommended for use in diesel hammer analysis.

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Publication

Vol. I—Background

FHWA-IP-76-14.1 124 pp (July 1976)

Availability—NTIS PB 261905

Vol. II—User's Manual

FHWA-IP-76-14.2 120 pp (July 1976)

Availability—NTIS PB 261906

Vol. III—Program Documentation

FHWA-IP-76-14.3 127 pp (July 1976)

Availability—NTIS PB 261907AS

Vol. IV—Narrative Presentation

FHWA-IP-76-14.4 66 pp (July 1976)

Availability—NTIS PB 261908AS

Vol. I—IV (set)

Availability—NTIS PB 261904AS

Visual Aid

Slidetape color 68 minutes (loan) (July 1976)

(1) Background, 18 minutes, 27 slides

(2) Model, 25 minutes, 49 slides

(3) Program Use and Performance, 25 minutes, 38 slides

Availability—Office of Implementation, HRT-10
—FHWA Regional Offices

Computer Program

FORTRAN IV (July 1976)

Availability—Office of Implementation, HRT-10

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Structures

BETTER BRIDGE DECKS

This film by the Maryland State Highway Administration illustrates the need for a comprehensive inspection program and provides a visual aid for training bridge inspectors in each of the six steps for inspecting bridge deck construction from the pre-pour planning stage to the curing state.

Visual Aid

16 mm movie color/sound 27 minutes (1979)

Availability—National Audiovisual Center No. A02324 (loan)
—RD&T Report Center (loan)
—FHWA Regional Offices

BRIDGE INSPECTOR'S MANUAL FOR MOVABLE BRIDGES

The manual describes the electrical and mechanical systems in use on movable bridges, such as vertical lift, swing span and bascule. It is intended for use as an instructional manual for training bridge inspectors and as a reference for experienced inspectors. It is a supplement to and should be used in conjunction with, the FHWA Bridge Inspector's Training Manual.

Publication

FHWA-IP-77-10 150 pp (1977)

Availability—Government Printing Office
GPO 050-002-00103-5

BRIDGE RATING AND ANALYSIS STRUCTURAL SYSTEM (BRASS)

A computer program has been developed to design and rate highway bridges. Manuals describing the system and a program tape are available.

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Publication

Vol. I—System Reference Manual

FHWA-RD-73-501 189 pp (September 1973)

This manual describes a computerized system used by bridge design engineers to inventory and evaluate existing highway bridges.

Availability—NTIS PB 231890AS

Vol. II—Example Problems

FHWA-RD-73-502 This report includes a variety of highway bridge rating problems which were resolved by BRASS. The report is tied to Volume I.

Availability—NTIS PB 231891

Vol. III—Supplemental User's Manual

FHWA-RD-73-503 This manual describes an updated version of the BRASS computer program. Volumes I and II are still good except where the revisions stated in Vol. III apply.

Availability—Bridge Division HNG-30

Computer Program

Standard 9 Track tape at 800 BPI. Tape contains FORTRAN IV source statements for all programs included in BRASS. This tape is tied into Volume I and Volume III.

Availability—Wyoming Highway Department

DETECTING DELAMINATION IN CONCRETE BRIDGE DECKS

This slidetape presentation shows the operation of a concrete delamination detector. The detector shown is a sonic-electronic device that identifies and records the location of substance delaminations of bridge deck concrete.

Visual Aid

Slidetape 12 minutes (loan) (1974)

Availability—Office of Implementation, HRT-10
—FHWA Regional Offices

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DRILLED SHAFT MANUAL

This two-volume manual presents rational procedures for designing drilled shafts subject to axial and/or lateral loads. Structural design of the shaft, construction methods, inspection, load testing, specifications, and cost estimates are also featured.

Publication

Volume I—Construction Procedures and Design for Axial Loading

FHWA-IP-77-21 140 pp (July 1977)

Availability—NTIS PB 80133085

Vol. II—Structural Analysis and Design for Lateral Loading

FHWA-IP-77-21 228 pp (July 1977)

Availability—NTIS PB 80133095

DESIGN MANUAL FOR BRIDGE STRUCTURAL MEMBERS UNDER WIND INDUCED EXCITATIONS

This manual presents the design of long slender bridge structural members subjected to wind-induced vibrations. It provides a stepwise procedure for computing the natural frequency of a structural member, the critical wind velocity which causes vortex shedding, as well as the deflection and stress of the member due to the vortex-induced vibration.

Publication

FHWA-TS-81-206 90 pp (March 1981)

Availability—Office of Implementation, HRT-10

EPOXY COATED REINFORCING STEEL

This film shows tests used in selecting coatings to protect rebars from chlorides and identifies the first four products approved. It then follows rebars through a coating plant and to the first bridge deck to incorporate them.

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Visual Aid

16 mm film color/sound 16 minutes (1974)

Availability—National Audiovisual Center No. 002113/RL
—FHWA Regional Offices

PASCO-KENNEWICK BRIDGE

The Pasco-Kennewick Intercity Bridge is the first cable-stayed bridge built in the United States utilizing precast, prestressed concrete segments with cantilever erection. The bridge has a cable-stayed main span of 299 meters and stayed flanking spans of 124 meters. The film follows the construction of the bridge from inception to opening. Emphasis is placed on the most interesting aspects of construction including: construction of pier seals; assembly and prestressing of precast segments; and fabrication, erection and jacking of cables.

Visual Aid

16 mm movie color 25 minutes (loan) (1979)

Availability—National Audiovisual Center No. A02325 (loan)
—Office of Implementation, HRT-10
—RD&T Report Center, HRD-11 (loan)
—FHWA Regional Offices

PORTABLE INSTRUMENT FOR LOAD HISTORY STUDIES

A device to monitor and record stress occurrences in steel bridge girders has been developed as a tool to provide data for load history and fatigue studies on bridges. This report discusses the field evaluation of the device by Kansas Department of Transportation.

Publication

FHWA-TS-80-232 100 pp (August 1980)

Availability—Office of Implementation, HRT-10

PROPOSED DESIGN SPECIFICATION FOR STEEL BOX GIRDERS

A new approach to specifications for steel box girders, based on load factor design, has been developed. This report includes the specification and design procedures, commentary on the specifications and a bibliography of past studies on steel box girders.

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Publication

FHWA-TS-80-205 288 pp (January 1980)

Availability—NTIS PB 80162324

PRESTRESS CONCRETE BRIDGES: SAFETY INSPECTION

This videotape is a training aid for qualified bridge inspectors at both the State and local level for the inspection of prestressed concrete bridges. The tape addresses the proper inspection procedures and depicts actual inspection of prestressed concrete bridges.

Visual Aid

3/4" videotape 60 minutes color/sound (June 1984)

Availability—Office of Implementation, HRT-10

SEISMIC RETROFIT MEASURES FOR HIGHWAY BRIDGES

This report consists of two volumes. Volume 1, entitled "Earthquake and Structural Analysis," includes a definition of terms, seismic risk maps, techniques and equations for the analysis of existing bridges subjects subject to earthquake loadings, and criteria for determining if a bridge warrants retrofitting. Volume 2 is a design manual and contains illustrations of various retrofit concepts and specific design procedures which can be applied to existing bridges.

Publication

Volume I

FHWA-TS-79-216 136 pp (April 1979)

Availability—NTIS PB 80103195

Volume 2

FHWA-TS-79-217 66 pp (April 1979)

Availability—NTIS PB 80103203

STRUCTURAL PLASTICS DESIGN MANUAL

Structural plastics are among the most promising and potentially useful materials available to the engineering profession, yet they also present

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a major unsolved challenge. The structural behavior of these plastics reflects a number of characteristics different from those of metal, lumber and concrete, and has not been as well documented as the behavior of these more common materials. This report represents the first phase of the development of a structural plastics design manual and covers the first four chapters of the proposed ten-chapter manual.

Publication

FHWA-TS-79-203 498 pp (March 1979)

Availability—Government Printing Office
GPO 023-000-00495-0

STRUCTURAL PLASTICS DESIGN MANUAL PHASES 2 AND 3; CHAPTER 5-10

This manual provides practical assistance and guidelines to structural engineers engaged in the design of plastics and reinforced plastics structural components. Chapters are devoted to: fundamental concepts of structural behavior; quantitative methods of design and analysis of various shapes; and fire resistance.

Publication

FHWA-TS-82-216 670 pp (August 1982)

Availability—Office of Implementation, HRT-10

WABASH RIVER BRIDGE

The Wabash River Bridge is a prestressed concrete highway structure over the Wabash River in Indiana. The structure is the first precast segmental bridge built in the United States by the incremental launching method. The slidetape illustrates and discusses the key factors in design and construction of the bridge.

Visual Aid

Slidetape color/sound 40 minutes (loan) (March 1980)

Availability—Office of Implementation, HRT-10

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SOURCES

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   211 Main Street
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   Federal Highway Administration HRA-010
   Mohawk Building, Room 412
   708 SW. Third Street
   Portland, Oregon 97204

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